ADDITIONAL

Service Manual

PIONEER®

ORDER NO.
HRT-187-0

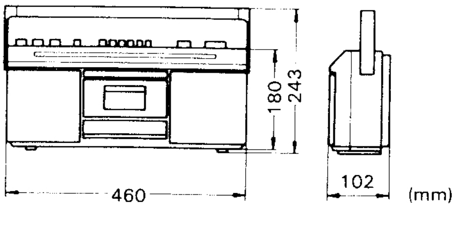
PORTABLE STEREO FM/SW2/SW1/MW RADIO CASSETTE RECORDER

SK-111F DU
SK-111F D/SA

Note: The additional service manual is designed to be used together with Model SK-101F/D Service Manual (HRT-182).
Refer to it for finding parts numbers and adjustment, etc. which are not shown in this manual.

SPECIFICATIONS

Max. output power	2W + 2W/RMS (SK-111F/DU)
Max. music power	9W (total music power)
Speaker	12 cm (5 in.) full range
Input	AUX, EXT MIC
Output	LINE OUT, headphone
Subfunctions	Cue and review, auto stop mechanism, internal microphone, soft eject
Indicator	POWER (red LED), FM STEREO (red LED), LEVEL METER (5P red LED), TAPE COUNTER
Frequency range	FM: 88 ~ 108 MHz SW1: 2.3 ~ 7 MHz SW2: 7 ~ 22 MHz MW: 525 ~ 1,605 kHz
Power source	120/220/240V AC, 50/60 Hz 9V DC (six 1.5V "D" batteries)
Dimentions (W × H × D)	460 × 180 × 102 mm (18-1/8 × 7-1/8 × 4 in.)
Weight	3.2 kg (7 lbs., without batteries)



Note: Specifications and design are subject to change without notice.

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS [USA] INC. 1925 E. Dominguez St., Long Beach, California 90810 U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Luithagen-Haven 9, 2030 Antwerp, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia

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PARTS LIST

EXPLODED VIEW

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.*
  ★ ★ : GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

Cabinet (Page 23)

SK-101F/D				SK-111F/DU		SK-111F/D/SA	
Mark	No.	Part No.	Description	Part No.	Description	Part No.	Description
★	9.	HAC-261	Button (REC)	HAC-282	Button (REC)	HAC-282	Button (REC)
	20.	HXA-799	Front Case Assy	HXA-906	Front Case Assy	HXA-907	Front Case Assy
★★	24.	HNS-538	Door Assy	HNS-598	Door Assy	HNS-598	Door Assy
	27.	HNM-328	Shield Plate	HNM-349	Shield Plate	HNM-328	Shield Plate
	32.	HAL-352	Plate	——	Plate	——	Plate
	40.	HNS-554	Rear Case	HNS-601	Rear Case	HNS-554	Rear Case
⚠ ★	45.	HTT-163	Power Transformer	HTT-173	Power Transformer	HTT-163	Power Transformer
	49.	HNM-321	Cushion	HNM-350	Cushion	HNM-321	Cushion
⚠		——	——	HNV-528	Cover (AC Socket)	——	——
⚠		——	——	HNV-538	Cover (Switch)	——	——

Chassis (Page 26)

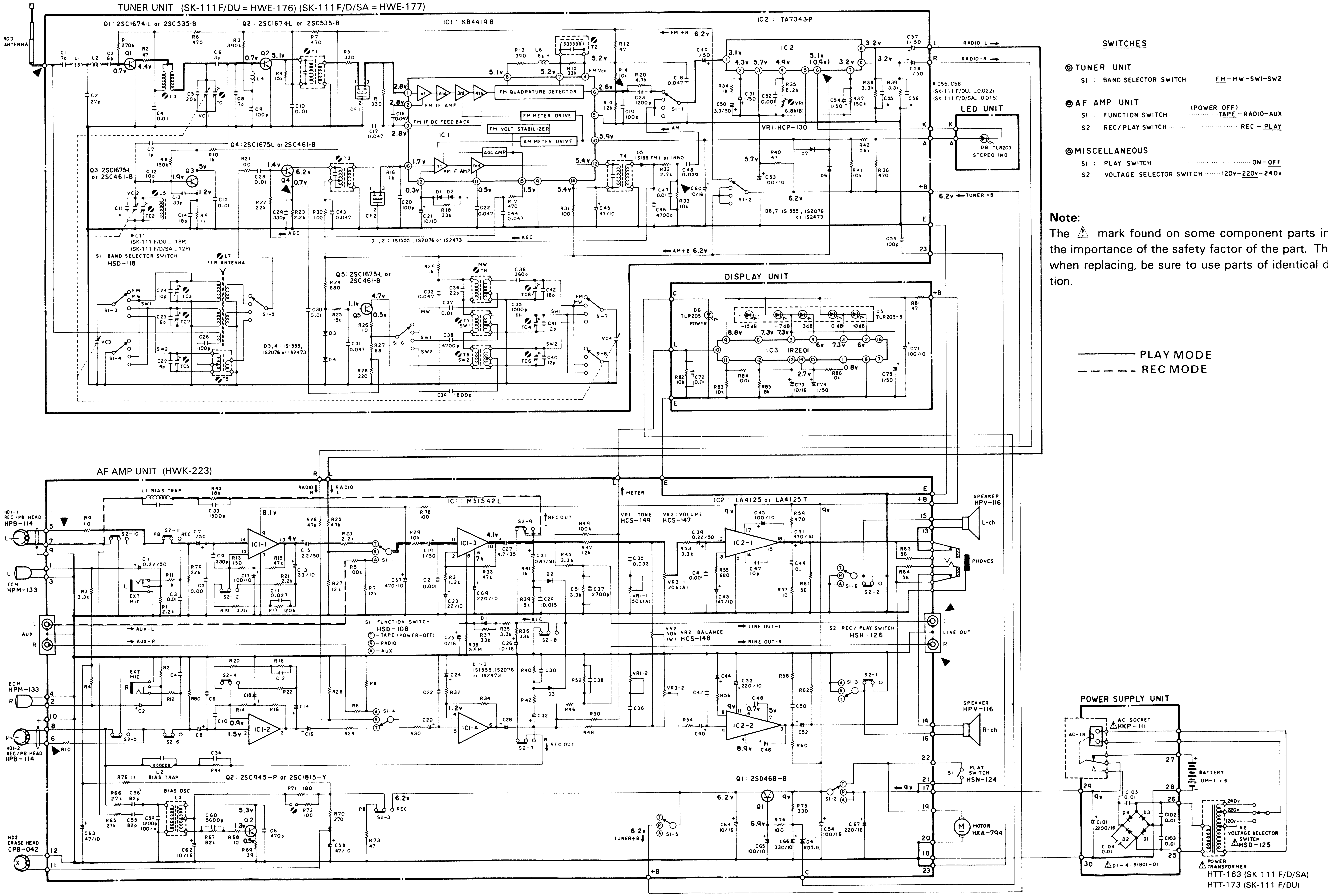
SK-101F/D				SK-111F/DU		SK-111F/D/SA	
Mark	No.	Part No.	Description	Part No.	Description	Part No.	Description
	1.	HWK-206	AF Amp Unit	HWK-223	AF Amp Unit	HWK-223	AF Amp Unit
	27.	HWE-156	Tuner Unit	HWE-176	Tuner Unit	HWE-177	Tuner Unit

PACKING METHOD

Parts List (Page 34)

SK-101F/D				SK-111F/DU		SK-111F/D/SA	
Mark	No.	Part No.	Description	Part No.	Description	Part No.	Description
	1.	HRD-167	Owner's Manual (English, Spanish)	HRB-198	Owner's Manual (English)	HRB-198	Owner's Manual (English)
		HRB-184	Owner's Manual (Arabic)	——	——	——	——
⚠		HDG-114	AC Cord	CDG-029	AC Cord	HDG-114	AC Cord
⚠	5.	HHA-581	Carton	HHA-671	Carton	HHA-673	Carton

SCHEMATIC CIRCUIT DIAGRAM (SK-111F/DU) (SK-111F/D/SA)


TUNER UNIT (SK-111F/DU = HWE-176) (SK-111F/D/SA = HWE-177)
ROD ANTENNA
Q1 : 2SC1674-L or 2SC535-B
Q2 : 2SC1674-L or 2SC535-B
IC1 : KB4419-B
IC2 : TA7343-P
FM QUADRATURE DETECTOR
FM IF AMP
FM IF DC FEED BACK
FM METER DRIVE
FM VOLT STABILIZER
AM METER DRIVE
AGC AMP
AM IF AMP
Q3 : 2SC1675-L or 2SC461-B
Q4 : 2SC1675L or 2SC461-B
Q5 : 2SC1675-L or 2SC461-B
VR1 : HCP-130
S1 BAND SELECTOR SWITCH HSD-118
FER ANTENNA
D1, 2 : 1S1555, 1S2076 or 1S2473
D3, 4 : 1S1555, 1S2076 or 1S2473
D6, 7 : 1S1555, 1S2076 or 1S2473
*C55, C56 (SK-111F/DU......0.022) (SK-111F/D/SA......0.015)
*C11 (SK-111F/DU......18P) (SK-111F/D/SA......12P)
LED UNIT
D8 TLR205 STEREO IND
DISPLAY UNIT
D6 TLR205 POWER
D5 TLR205-5
IC3 IR2E01
AF AMP UNIT (HWK-223)
IC1 : M51542L
IC2 : LA4125 or LA4125T
HD1-1 REC/PB HEAD HPB-114
ECM HPM-133
EXT MIC
AUX
L1 BIAS TRAP
L2 BIAS TRAP
VR1 : TONE HCS-149
VR3 : VOLUME HCS-147
VR2 : BALANCE HCS-148
S1 FUNCTION SWITCH HSD-108
Ⓣ-TAPE (POWER-OFF)
Ⓡ-RADIO
Ⓐ-AUX
S2 : REC/PLAY SWITCH HSH-126
LINE OUT-L
LINE OUT-R
LINE OUT
REC OUT
SPEAKER HPV-116 L-ch
SPEAKER HPV-116 R-ch
PHONES
HD1-2 REC/PB HEAD HPB-114
HD2 ERASE HEAD CPB-042
BIAS OSC
Q2 : 2SC945-P or 2SC1815-Y
Q1 : 2SD468-B
D1~3 : 1S1555, 1S2076 or 1S2473
PLAY SWITCH HSN-124
MOTOR HXA-794
TUNER+B
POWER SUPPLY UNIT
AC SOCKET HKP-111
BATTERY UM-1 x 6
S2 VOLTAGE SELECTOR SWITCH HSD-125
D1~4 : S1B01-01
POWER TRANSFORMER
HTT-163 (SK-111F/D/SA)
HTT-173 (SK-111F/DU)
PLAY MODE
REC MODE
1
2
3
4
5
6
A
B
C
D

SWITCHES

◎TUNER UNIT

S1 : BAND SELECTOR SWITCH············FM-MW-SW1-SW2

◎AF AMP UNIT

S1 : FUNCTION SWITCH··········(POWER OFF) TAPE-RADIO-AUX

S2 : REC/PLAY SWITCH·························REC - PLAY

◎MISCELLANEOUS

S1 : PLAY SWITCH·····································ON-OFF

S2 : VOLTAGE SELECTOR SWITCH·········120v-220v-240v

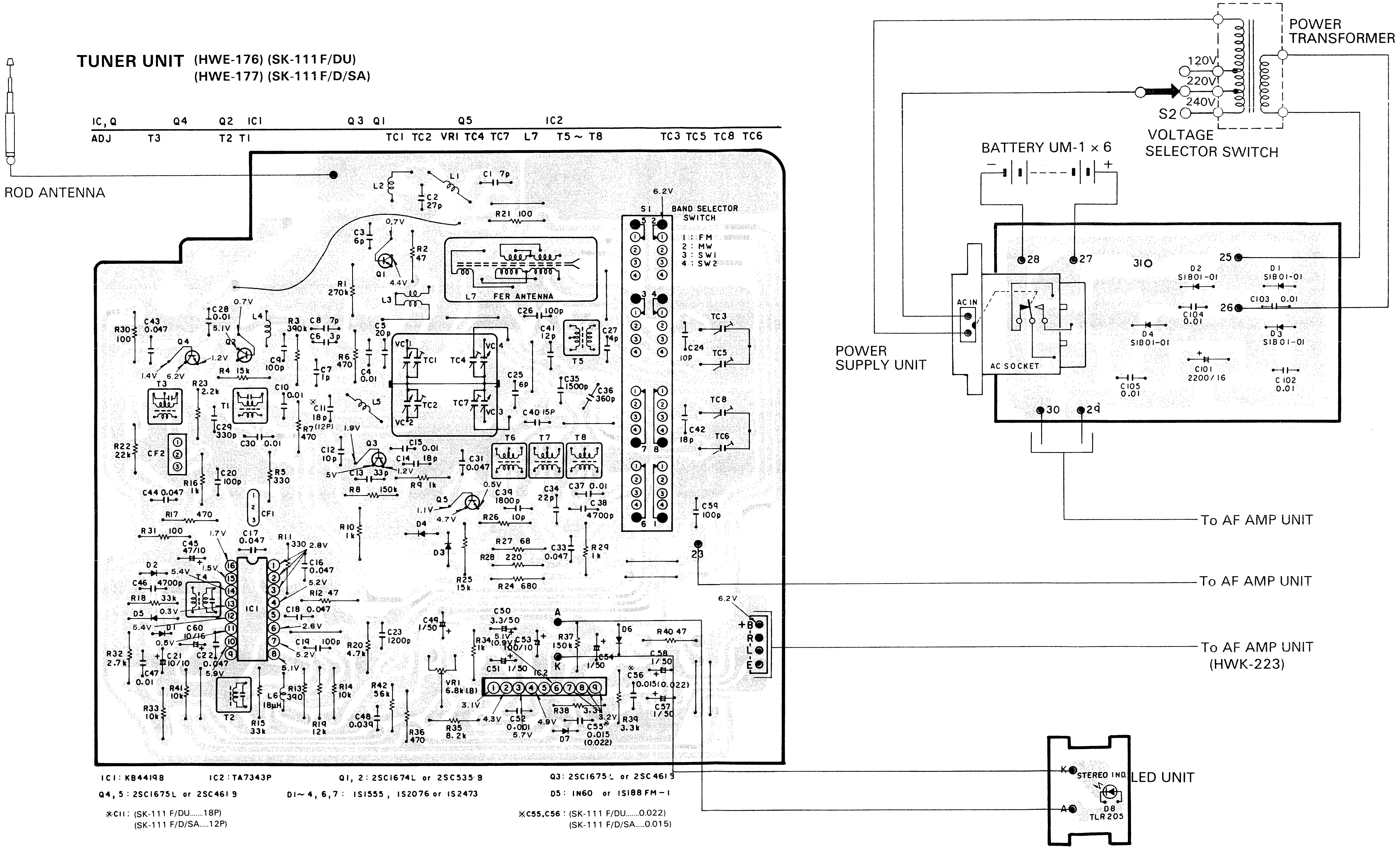
Note:

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designetion.

Fig. 1

CONNECTION DIAGRAM (SK-111F/DU) (SK-111F/D/SA)

TUNER UNIT (HWE-176) (SK-111F/DU) (HWE-177) (SK-111F/D/SA)


IC, Q
ADJ
Q4 T3
Q2 IC1 T2 T1
Q3 Q1 TC1 TC2
Q5 VR1 TC4 TC7
IC2 L7 T5 ~ T8
TC3 TC5 TC8 TC6
ROD ANTENNA
L1 L2 C1 7p C2 27p
R21 100
C3 6p Q1 0.7V 4.4V R2 47
R1 270k L3
L7 FER ANTENNA
6.2V
S1 BAND SELECTOR SWITCH
1 : FM
2 : MW
3 : SW1
4 : SW2
C26 100p C41 12p T5 C27 14p
C24 10p
C25 6p C35 1500p C36 360p
C40 15P C42 18p
TC3 TC5 TC8 TC6
C59 100p
C28 0.01 0.7V 5.1V L4 Q2
R3 390k C8 7p C6 3p C9 100p C7 1p
C5 20p R6 470 C4 0.01
TC1 TC2 TC4 TC7 VC1 VC2 VC3 VC4
R30 100 C43 0.047 Q4 1.2V 1.4V 6.2V
R4 15k T3 T1 R23 2.2k C29 330p C10 0.01 C30 0.01
C11 18p (12P) R7 470 L5 1.9V
R22 22k CF2
C12 10p Q3 5V C13 33p C15 0.01 C14 18p 1.2V C31 0.047
T6 T7 T8
R16 1k C20 100p R5 330 R9 1k R8 150k
C44 0.047 CF1
Q5 0.5V 1.1V 4.7V C39 1800p C34 22p C37 0.01 C38 4700p
R17 470 R26 10p
R31 100 1.7V C17 0.047 R11 330 2.8V R10 1k
D4 D3 R27 68 R28 220 C33 0.047 R29 1k
C45 47/10 1.5V C16 0.047 5.2V 23
D2 5.4V T4 C46 4700p
R18 33k 0.3V R12 47 R25 15k R24 680
D5 C18 0.047 IC1
5.4V D1 C60 10/16 2.6V C23 1200p C49 1/50
C50 3.3/50 A D6 R40 47 6.2V
0.5V C19 100p R20 4.7k R34 1k 5.1V (0.9V) C53 100/10 R37 150k C54 1/50
+B R L E
R32 2.7k C47 0.01 C21 10/10 C22 0.047 5.9V 5.2V 5.1V
C51 1/50 K C58 1/50
R41 10k T2 L6 18μH R13 390 R14 10k R42 56k VR1 6.8k(B) IC2 C56 0.015 (0.022)
R33 10k R15 33k R19 12k C48 0.039 R36 470 3.1V R35 8.2k 4.3V C52 0.001 5.7V 4.9V R38 3.3k D7 C55 0.015 (0.022) 3.2V R39 3.3k C57 1/50
POWER TRANSFORMER
120V 220V 240V S2
VOLTAGE SELECTOR SWITCH
BATTERY UM-1 × 6
28 27 31 25 26
AC IN AC SOCKET
D2 S1B01-01 D1 S1B01-01
C104 0.01 C103 0.01
D4 S1B01-01 D3 S1B01-01
C101 2200/16 C105 0.01 C102 0.01
POWER SUPPLY UNIT
30 29
To AF AMP UNIT
To AF AMP UNIT
To AF AMP UNIT (HWK-223)
K STEREO IND. A D8 TLR205
LED UNIT

IC1 : KB4419B IC2 : TA7343P Q1, 2 : 2SC1674L or 2SC535-B Q3 : 2SC1675L or 2SC461-B

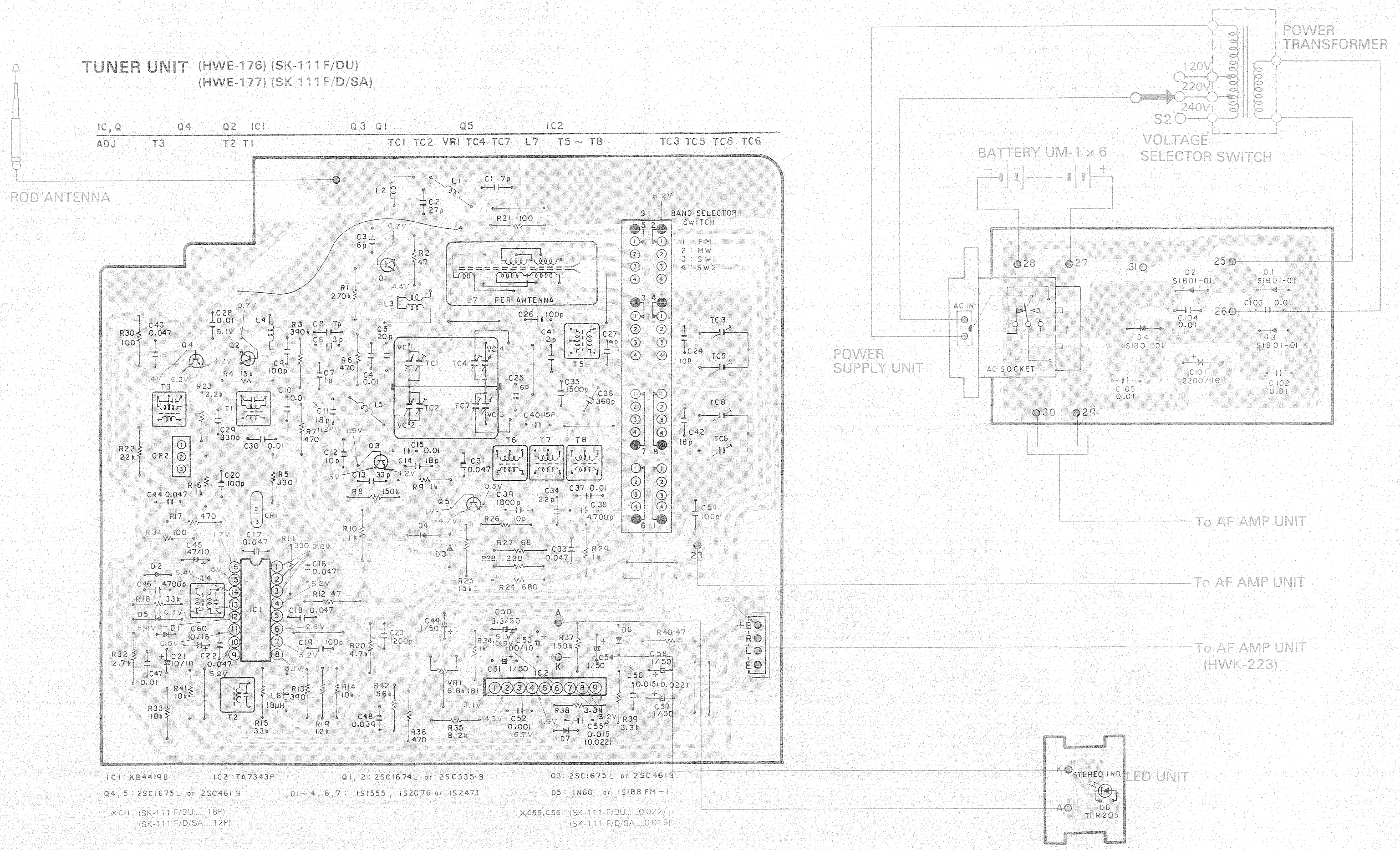
Q4, 5 : 2SC1675L or 2SC461-B D1~4, 6, 7 : 1S1555, 1S2076 or 1S2473 D5 : 1N60 or 1S188FM-1

※C11 : (SK-111 F/DU.......18P)
(SK-111 F/D/SA.....12P)

※C55, C56 : (SK-111 F/DU.......0.022)
(SK-111 F/D/SA.....0.015)

Fig. 2

CONNECTION DIAGRAM (SK-111F/DU) (SK-111F/D/SA)


TUNER UNIT (HWE-176) (SK-111F/DU)
(HWE-177) (SK-111F/D/SA)
IC, Q
ADJ
Q4
T3
Q2 IC1
T2 T1
Q3 Q1
TC1 TC2
Q5
VR1 TC4 TC7
IC2
L7
T5 ~ T8
TC3 TC5 TC8 TC6
ROD ANTENNA
FER ANTENNA
BAND SELECTOR SWITCH
S1
1 : FM
2 : MW
3 : SW1
4 : SW2
6.2V
IC1
IC2
CF1
CF2
POWER TRANSFORMER
120V
220V
240V
S2
VOLTAGE SELECTOR SWITCH
BATTERY UM-1 × 6
AC IN
AC SOCKET
POWER SUPPLY UNIT
D1 S1B01-01
D2 S1B01-01
D3 S1B01-01
D4 S1B01-01
C101 2200/16
C102 0.01
C103 0.01
C104 0.01
C105 0.01
To AF AMP UNIT
To AF AMP UNIT
To AF AMP UNIT (HWK-223)
+B
R
L
E
STEREO IND.
LED UNIT
D8 TLR205
K
A

IC1 : KB4419B IC2 : TA7343P Q1, 2 : 2SC1674L or 2SC535 B Q3 : 2SC1675L or 2SC461 B

Q4, 5 : 2SC1675L or 2SC461 B D1 ~ 4, 6, 7 : 1S1555, 1S2076 or 1S2473 D5 : 1N60 or 1S188 FM-1

※C11 : (SK-111 F/DU.......18P)
(SK-111 F/D/SA.....12P)

※C55, C56 : (SK-111 F/DU.......0.022)
(SK-111 F/D/SA.....0.015)

Fig. 2

ELECTRICAL PARTS LIST

NOTE:
When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 *When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).*

560Ω 56×10^1 561........................ RD1/4PS $\boxed{5}\boxed{6}\boxed{1}$ J
47 kΩ 47×10^3 473........................ RD1/4PS $\boxed{4}\boxed{7}\boxed{3}$ J
0.5Ω 0R5.. RN2H $\boxed{0}\boxed{R}\boxed{5}$ K
1Ω 010.. RS1P $\boxed{0}\boxed{1}\boxed{0}$ K

Ex. 2 *When there are 3 effective digits (such as in high precision metal film resistors).*

5.62 kΩ 562×10^1 .... RN1/4SR $\boxed{5}\boxed{6}\boxed{2}\boxed{1}$ F

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  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

Tuner Unit (HWE-176) (SK-111 F/DU)
(HWE-177) (SK-111 F/D/SA)

MISCELLANEOUS

Mark	Part No.	Symbol & Description
★★	KB4419B	IC1
★★	TA7343P	IC2
★★	2SC1674-L or 2SC535-B	Q1, Q2
★★	2SC1675-L or 2SC461-B	Q3 – Q5
★	1S1555 or 1S2076 or 1S2473	D1 – D4, D6, D7
★	1N60 or 1S188FM-1	D5
	HTC-179	L1 Coil
	HTC-180	L2 Coil
	HTC-181	L3 Coil
	HTH-120	L4 Coil
	HTC-182	L5 Coil (SK-111 F/DU)
	HTC-204	L5 Coil (SK-111 F/D/SA)
	CTF-071	L6 Ferri-Inductor, 18μH
	HTB-152	L7 Bar Antenna Assy
	CTC-028 or CTC-040	T1 Coil
	HTC-190 or HTC-191	T2 Coil
	HTE-125 or HTE-133	T3 Coil
	HTE-126 or HTE-134	T4 Coil
	HTA-106 or HTA-109	T5 Coil
	HTA-107 or HTA-110	T6 Coil
	HTA-108 or HTA-111	T7 Coil
	HTB-155 or HTB-156	T8 Coil
	HCL-116	VC1 – VC4, TC1, TC2, TC4, TC7 Variable Capacitor
	HCL-115	TC3, TC5, TC6, TC8
	CTF-040	CF1 Ceramic Filter
	HTF-122	CF2 Ceramic Filter
★	HCP-130	VR1 Semi-fixed, 6.8 kΩ (B)
★	HSD-118	S1 Switch (BAND)

RESISTORS

Mark	Part No.	Symbol & Description
	RD1/4HM□□□J	R1 – R42

CAPACITORS

Mark	Part No.	Symbol & Description
	CCDSL070D50	C1, C8
	CCDSL270K50	C2
	CCDSL060D50	C3
	CKDYF103Z25	C4, C10, C28, C47
	CCDSH200J50	C5
	CCDSL030D50	C6
	CCDSL010C50	C7
	CKDYB101K50	C9, C19, C20, C26, C59
	CCDCH180J50	C11 (SK-111 F/DU)
	CCDCH120J50	C11 (SK-111 F/D/SA)
	CCDSH100K50	C12, C24
	CCDSH330K50	C13
	CCDSH180K50	C14, C42
	CKDYD103M50	C15, C30, C37
	CKDYF473Z25	C16, C17, C22, C31, C33, C43, C44
	CKDBC473M25	C18
	CEA100P16	C21, C60
	CKDYB122K50	C23
	CKDSH060D50	C25
	CCDSH040D50	C27
	CKDYB331K50	C29
	VACANT	C32
	CCDSL220K50	C34
	CQSH152J50	C35
	CQSH361J50	C36
	CQMA472K50	C38, C46
	CQMA182K50	C39
	CCDTH150J50	C40
	CCDTH120J50	C41
	CEA470P10	C45
	CKDBC393M25	C48
	CEA010P50	C49, C51, C54, C57, C58
	CEA3R3P50	C50
	CQSH102K50	C52
	CEA101P10	C53
	CKDBC153M25	C55, C56 (SK-111 F/D/SA)
	CKDBC223M25	C55, C56 (SK-111 F/DU)

AF Amp Unit (HWK-223) (SK-111 F/DU)
(SK-111 F/D/SA)

HWK-206			HWK-223	
Mark	Part No.	Symbol & Description	Part No.	Symbol & Description
	RD1/4HM1R5J	R77	—	—
	CEA221P16	C68	—	—

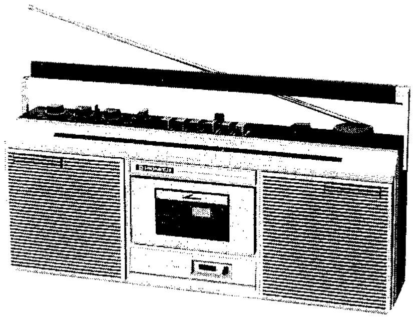
Power Supply Unit

Mark	Part No.	Symbol & Description
★	10E1 or 1S1886 or S1B-01-01 or DS135	D1 – D4
	CEA222P16	C101
	CKDYF103Z50	C102 – C105

Miscellaneous Parts List

Mark	Part No.	Symbol & Description
★	HPM-133	ECM Microphone Assy
★★	HXA-794	M Motor Unit
★★	HPB-114	HD1 Head
★★	CPB-042	HD2 Head
★★	HPV-116	SP Speaker
★★	HSN-124	S1 Switch (PLAY)
⚠ ★	HTT-173	T Power Transformer (SK-111 F/DU)
⚠ ★	HTT-163	T Power Transformer (SK-111 F/D/SA)

Service Manual



ORDER NO.
HRT-182-0

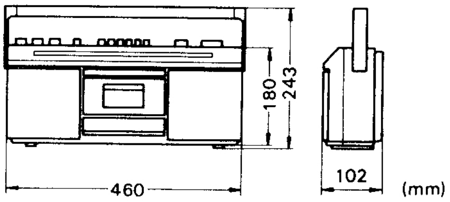
PORTABLE STEREO FM/SW/MW RADIO CASSETTE RECORDER

SK-101F

D

SPECIFICATIONS

Max. music power	9W (total music power)
Speaker	12 cm (5 in.) full range
Input	AUX, EXT MIC
Output	LINE OUT, headphone
Subfunction	Cue and review, auto stop mechanism, internal microphone
Indicator	POWER (red LED), FM STEREO (red LED), LEVEL METER (5P red LED), TAPE COUNTER
Frequency range	FM: 88 ~ 108 MHz SW1: 2.3 ~ 7 MHz SW2: 7 ~ 22 MHz MW: 525 ~ 1,605 kHz
Power source	120/220/240V AC, 50/60 Hz 9V DC (six 1.5V "D" batteries)
Dimentions (W × H × D)	460 × 180 × 102 mm (18-1/8 × 7-1/8 × 4 in.)
Weight	3.2 kg (7 lbs., without batteries)



Note: Specifications and design are subject to change without notice.

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS OF AMERICA 1925 E. Dominguez St. Long Beach, Calif. 90810
PIONEER ELECTRONIC (EUROPE) N.V. Luithagen-Haven 9, 2030 Antwerp, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia

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1. PARTS LOCATION

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.*
  ★ ★ : GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

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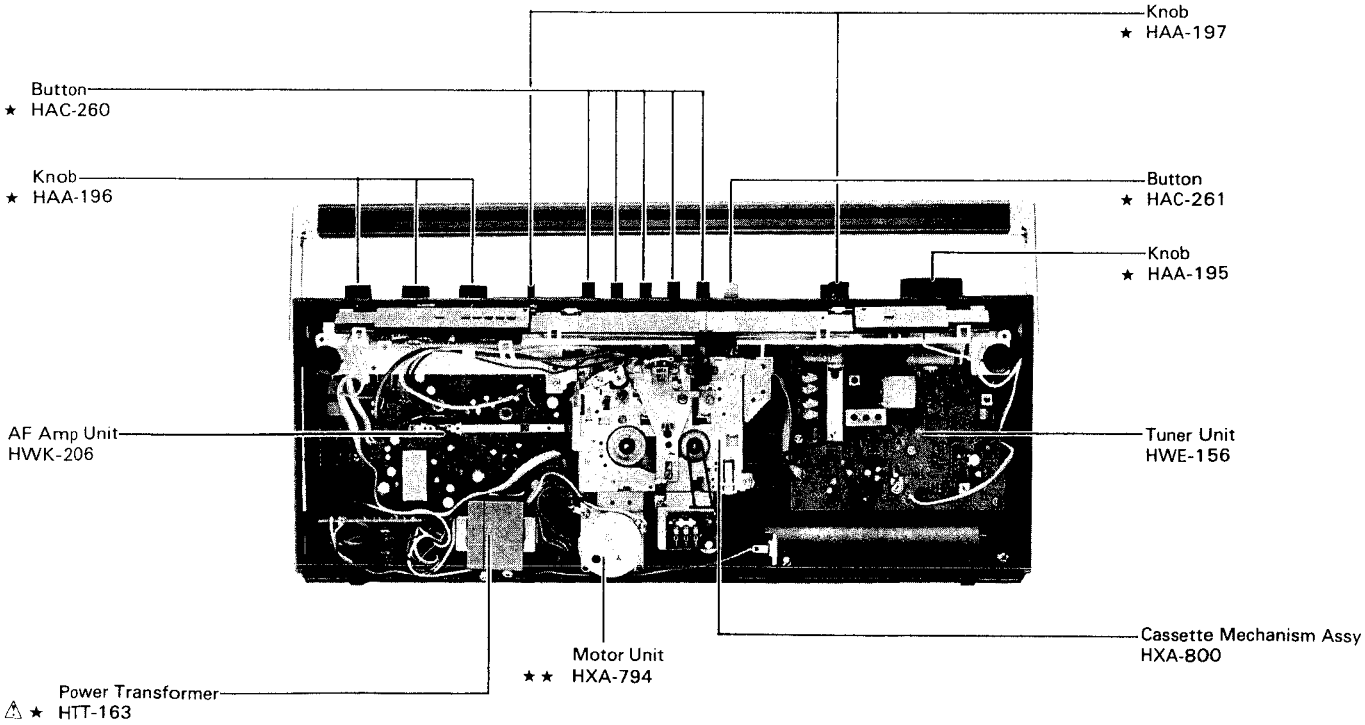

Knob
★ HAA-197
Button
★ HAC-260
Knob
★ HAA-196
Button
★ HAC-261
Knob
★ HAA-195
AF Amp Unit
HWK-206
Tuner Unit
HWE-156
Cassette Mechanism Assy
HXA-800
Motor Unit
★★ HXA-794
Power Transformer
⚠ ★ HTT-163

Fig. 1

2. BLOCK DIAGRAM

● Playback Mode

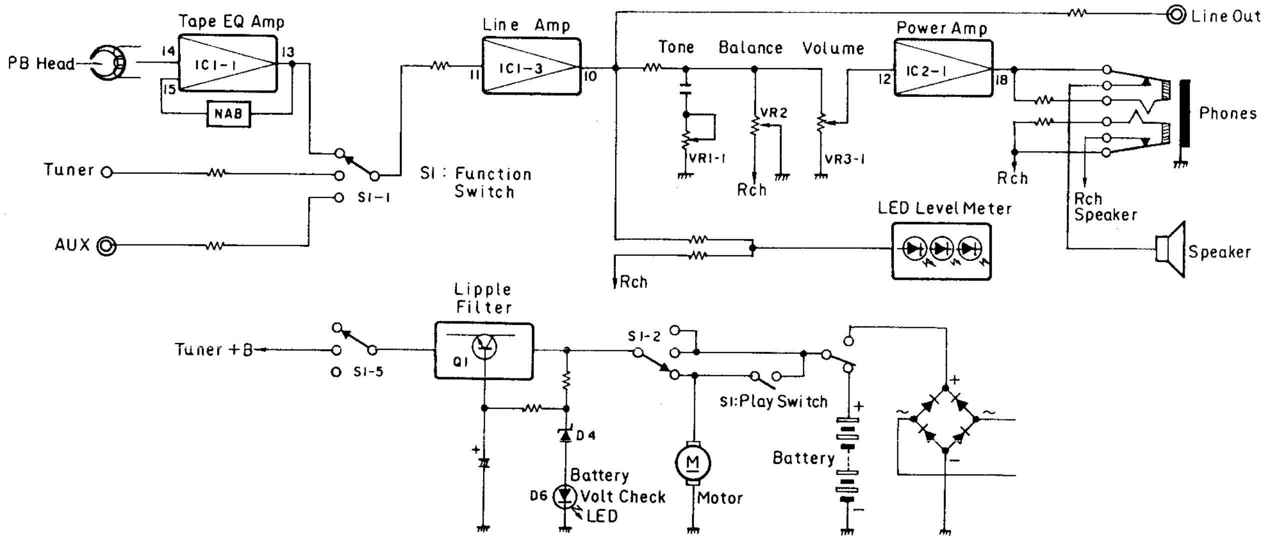

Tape EQ Amp
PB Head
14
13
15
IC1-1
NAB
Line Amp
IC1-3
11
10
Tuner
AUX
S1-1
S1 : Function Switch
Line Out
Tone
Balance
Volume
Power Amp
IC2-1
12
18
VR1-1
VR2
VR3-1
Rch
Rch
Phones
Rch Speaker
Speaker
LED Level Meter
Rch
Lipple Filter
Q1
Tuner +B
S1-5
S1-2
S1:Play Switch
D4
Battery Volt Check LED
D6
M
Motor
Battery
+
−

Fig. 2

● Record Mode

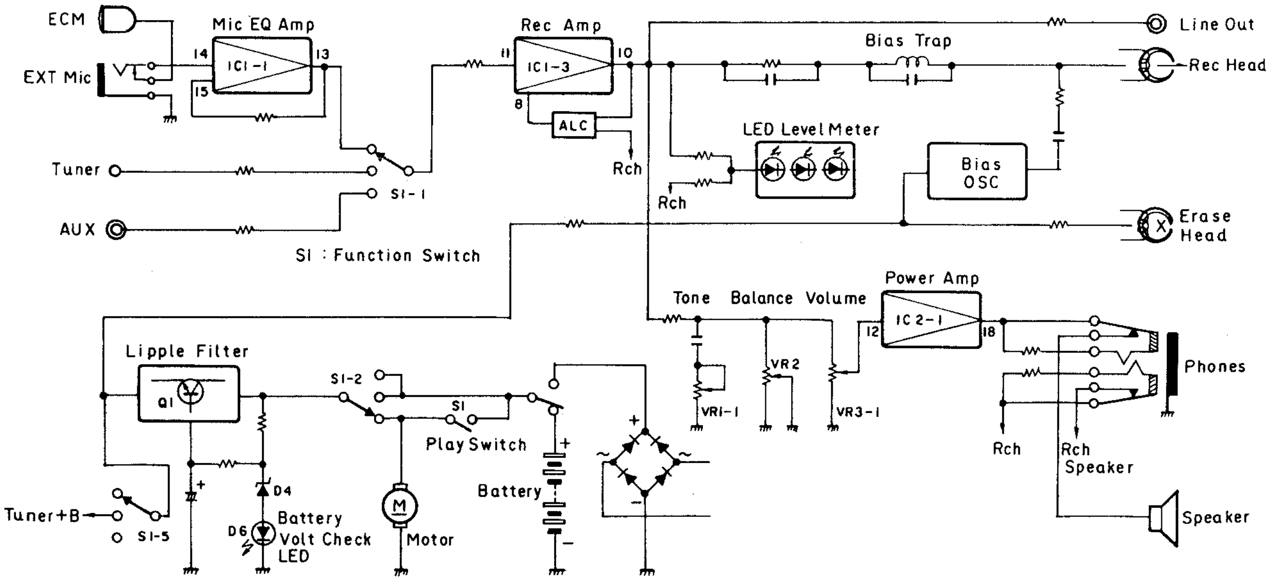

ECM
EXT Mic
Mic EQ Amp
14
13
15
IC1-1
Rec Amp
IC1-3
11
10
8
ALC
Rch
Line Out
Bias Trap
Rec Head
LED Level Meter
Rch
Bias OSC
Erase Head
Tuner
AUX
S1-1
S1 : Function Switch
Tone
Balance
Volume
Power Amp
IC2-1
12
18
VR1-1
VR2
VR3-1
Phones
Rch
Rch Speaker
Speaker
Lipple Filter
Q1
S1-2
S1
Play Switch
Battery
M
Motor
D4
Battery Volt Check LED
D6
Tuner+B
S1-5
+
−

Fig. 3

Tuner Section

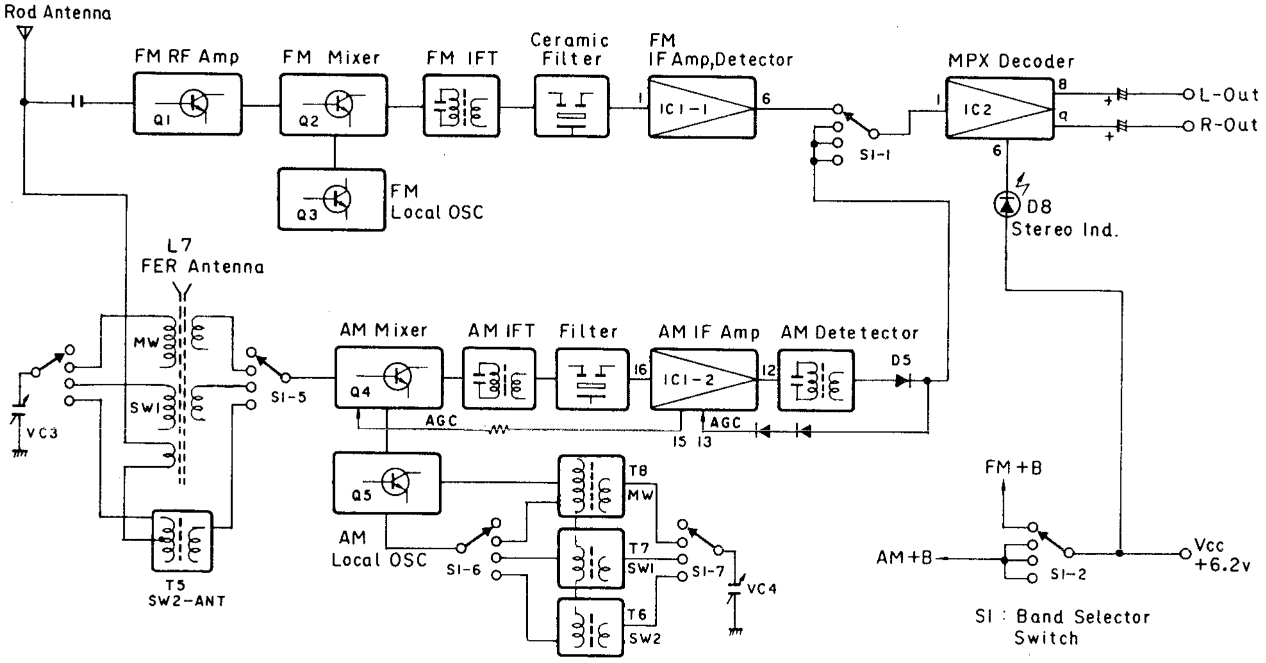

Rod Antenna
FM RF Amp
Q1
FM Mixer
Q2
FM IFT
Ceramic Filter
FM IF Amp,Detector
1
IC1-1
6
FM Local OSC
Q3
S1-1
MPX Decoder
1
IC2
8
9
6
L-Out
R-Out
D8
Stereo Ind.
L7
FER Antenna
MW
SW1
VC3
S1-5
AM Mixer
Q4
AM IFT
Filter
AM IF Amp
16
IC1-2
12
AM Detetector
D5
AGC
AGC
15
13
Q5
AM Local OSC
S1-6
T8
MW
T7
SW1
T6
SW2
S1-7
VC4
T5
SW2-ANT
FM+B
AM+B
S1-2
Vcc +6.2v
S1 : Band Selector Switch

Fig. 4

3. LEVEL DIAGRAM

● Playback Mode

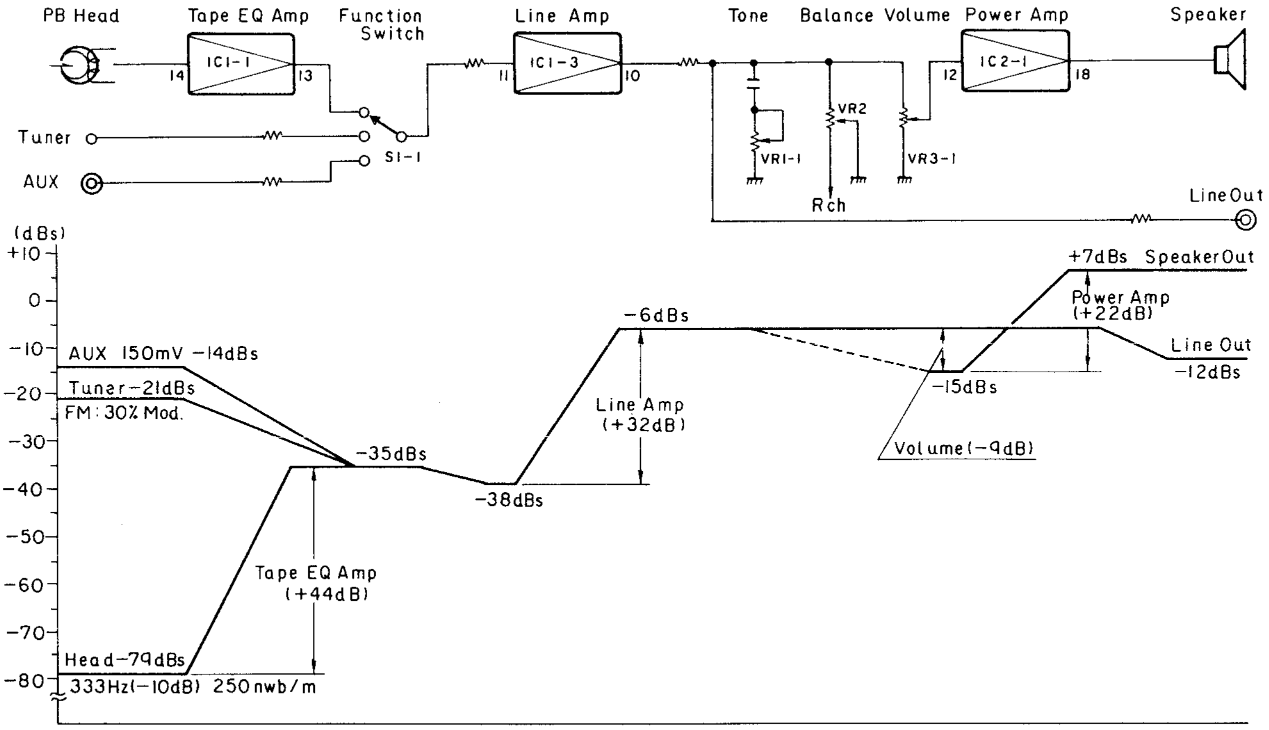

PB Head
Tape EQ Amp
Function Switch
Line Amp
Tone
Balance
Volume
Power Amp
Speaker
IC1-1
14
13
IC1-3
11
10
IC2-1
12
18
Tuner
AUX
S1-1
VR1-1
VR2
VR3-1
Rch
Line Out
(dBs)
+10
0
-10
-20
-30
-40
-50
-60
-70
-80
AUX 150mV -14dBs
Tuner-21dBs
FM: 30% Mod.
-35dBs
-38dBs
-6dBs
Line Amp (+32dB)
Tape EQ Amp (+44dB)
Head-79dBs
333Hz(-10dB) 250nwb/m
-15dBs
Volume(-9dB)
+7dBs Speaker Out
Power Amp (+22dB)
Line Out
-12dBs

Fig. 5

● Record Mode

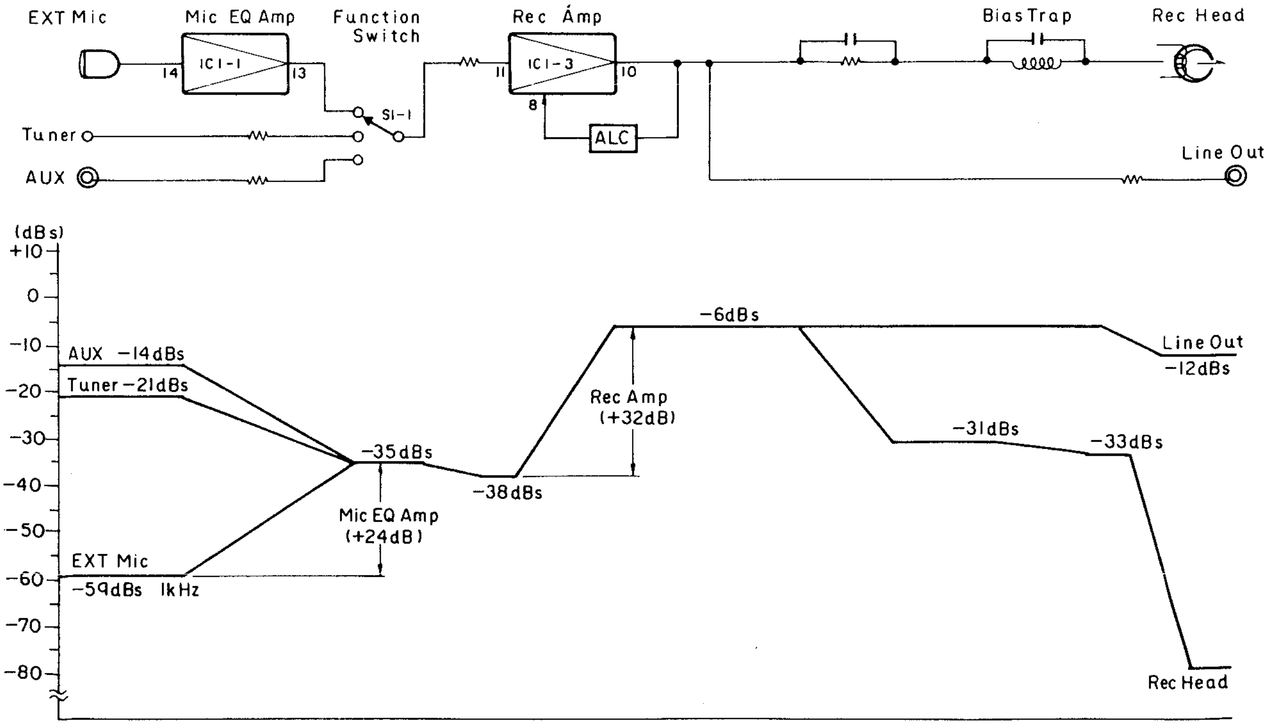

EXT Mic
Mic EQ Amp
Function Switch
Rec Amp
Bias Trap
Rec Head
IC1-1
14
13
IC1-3
11
10
8
ALC
S1-1
Tuner
AUX
Line Out
(dBs)
+10
0
-10
-20
-30
-40
-50
-60
-70
-80
AUX -14dBs
Tuner-21dBs
-35dBs
-38dBs
-6dBs
Rec Amp (+32dB)
Mic EQ Amp (+24dB)
EXT Mic
-59dBs 1kHz
-31dBs
-33dBs
Line Out
-12dBs
Rec Head

Fig. 6

4. DISASSEMBLY

● Removal of Antenna

1. Antenna can be removed without taking out the rear case if the screw (A) is taken off.
2. When mounting the antenna, be sure to insert it with its D cut surface facing towards you, and tighten the screw securely after confirming the screw hole.

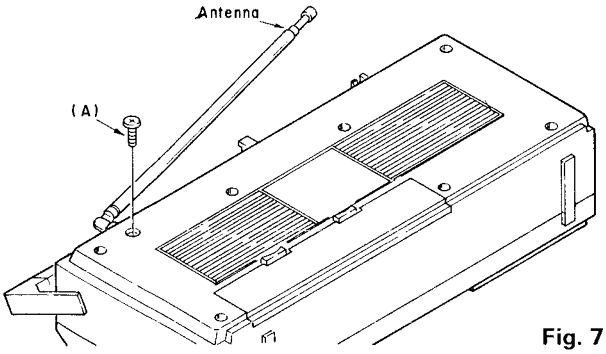


Fig. 7

● Removal of Front Case

1. Take out the battery cell, and check to be sure that AC cord is not connected.
2. When the eight screws are taken off from the rear case side, it is possible to remove the front case. (One screw is located in the battery case.)

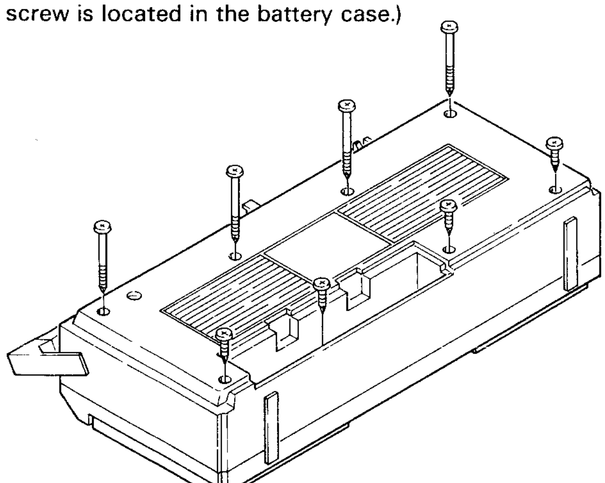


Fig. 8

● Removal of Cassette Door

1. The cassette door cannot be removed unless the same steps for removal of the front case assy are taken.
2. Take off the five screws.

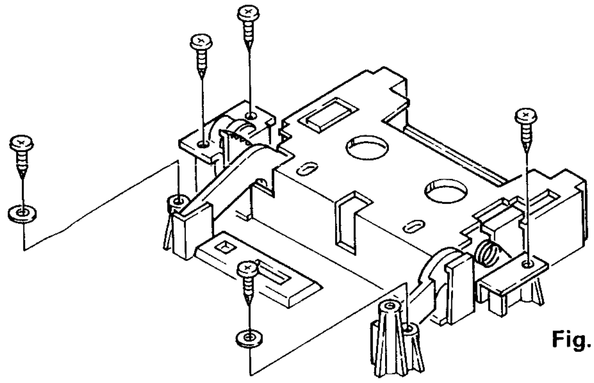


Fig. 9

● Removal of Cassette Mechanism Assy

1. Take off four screws.
2. Lift the cassette mechanism assy in the direction of arrow to remove it.

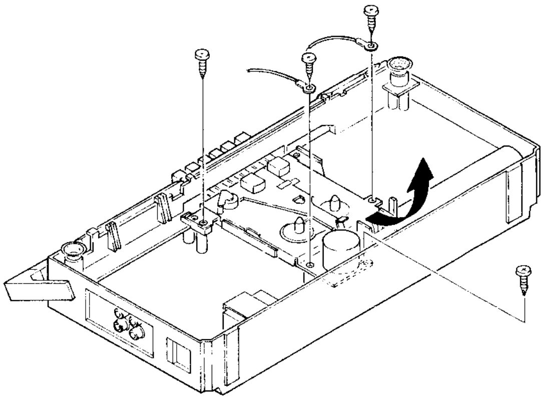


Fig. 10

● Removal of P.C. Board Unit

1. Remove knobs, etc. in front of the panel.
2. For removal of the P.C. board unit, take off the two screws for the amplifier, the three screws for the tuner unit, and the screw for the lever.

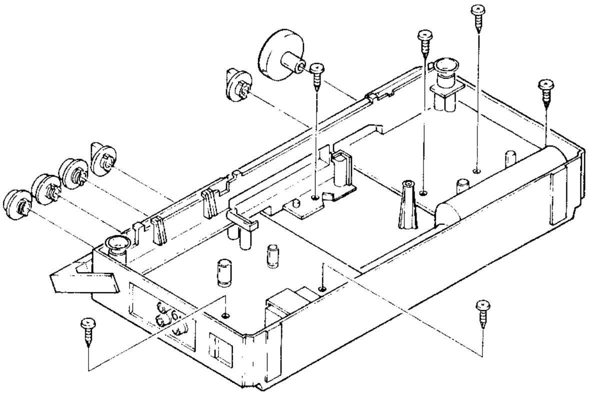


Fig. 11

5. ADJUSTMENT

5.1 CHECK POINTS OF CASSETTE MECHANISM

Confirm the following items when replacing parts of the cassette mechanism.

■ Tape speed deviation:

$(3{,}000 \pm {}^{90}_{60}$ Hz$)$
$(4.76$ cm/s $\pm {}^{3}_{2}$ %$)$

Using an STD-301A, measure the speed at the start and end of winding and take the maximum value. Measuring time shall be 5 ~ 6 seconds.

■ Wow and flutter:

Less than 0.3% (RMS)
Less than 0.2% (WRMS)

Using an STD-301A, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 ~ 6 seconds.

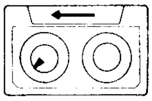
■ Fast forward and rewinding time:

Less than 105 seconds

Using an C-60, set to fast forward and rewind, and measure the time with a stop watch.

■ Winding torque:

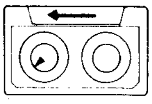
40 ~ 70 g•cm



Using a cassette type torque meter (120 g•cm), measure the minimum value while in the play mode. Measuring time shall be 5 ~ 6 seconds.

■ F.F. torque:

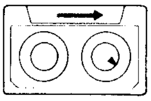
60 ~ 160 g•cm



Using a cassette type torque meter (160 g•cm), measure the value when the tape stops in the F.F. mode.

■ REW torque:

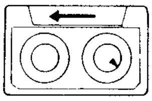
60 ~ 160 g•cm



Using a cassette type torque meter (160 g•cm), measure the value when the tape stops in the REW mode.

■ Back tension torque:

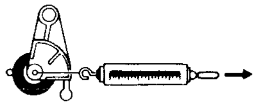
Less than 5 g•cm



After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.

■ Pinch roller pressure:

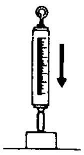
270 ~ 470 g



Measure the pressure with a tension meter (1 kg) at the point where the rotor stops rotating at the center of the pinch roller.

■ **Lever operating force**

Play .... Less than 1,800 g
REC .... Less than 1,000 g
F.F. Stop .... Less than 1,700 g
REW, Pause .... Less than 1,500 g



5.2 HEAD AZIMUTH ADJUSTMENT

● Connection Diagram

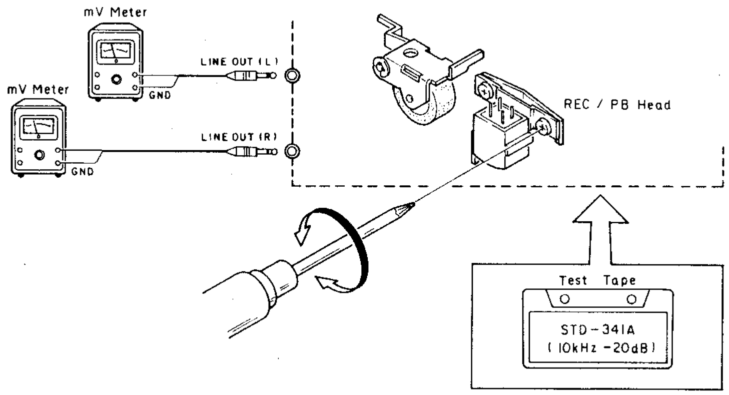

mV Meter
mV Meter
LINE OUT (L)
GND
LINE OUT (R)
GND
REC / PB Head
Test Tape
STD-341A
(10kHz -20dB)

Fig. 12

Switch position
Function switch.. TAPE

● To Adjust

1. Load the STD-341A (10 kHz-20 dB) test tape and depress the play lever to set the unit to the playback mode.
2. Adjust the azimuth adjust screw so that the deflection of the mV meter pointer indicates the maximum for both the left and right channels.
3. After adjustment, lock it with the Screw-Tight.

5.3 REC BIAS ADJUSTMENT

● Connection Diagram

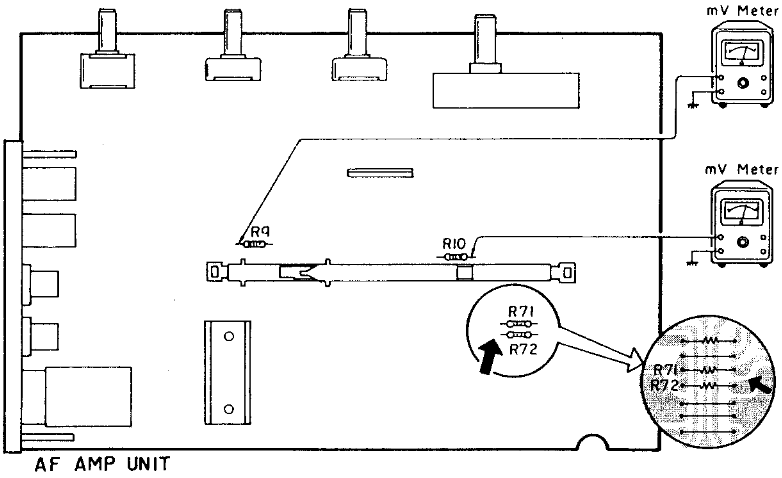

mV Meter
mV Meter
R9
R10
R71
R72
R71
R72
AF AMP UNIT

Fig. 13

Switch position
Function switch.. AUX

● To Adjust

1. Set the unit to record mode. Measure A.C voltage on AF Amp assembly as illustrated. The mV meter should read 3.6 mV. If it reads less, connect R71 and R72 in parallel. To connect them, solder the points indicated by arrows.

5.4 MW IF ADJUSTMENT

● Connection Diagram

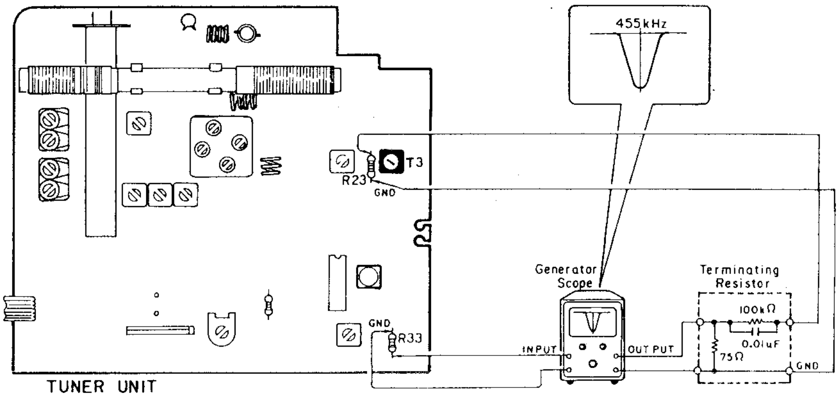

455kHz
T3
R23
GND
GND
R33
Generator Scope
Terminating Resistor
100kΩ
0.01uF
75Ω
INPUT
OUT PUT
GND
TUNER UNIT

Fig. 14

Generator Scope

Sweep center frequency	455 kHz
Input gain	0.3 Vp-p/cm

Switch positions

Function switch	TUNER
Band switch	MW

● To Adjust

1. Apply the minimum output signal enabling the Generator Scope's U curve to be checked from the Generator scope and adjust T3 so that amplitude of the curve is brought to its maximum and the symmetry is made optimum.

5.5 MW TRACKING ADJUSTMENT

● Connection Diagram

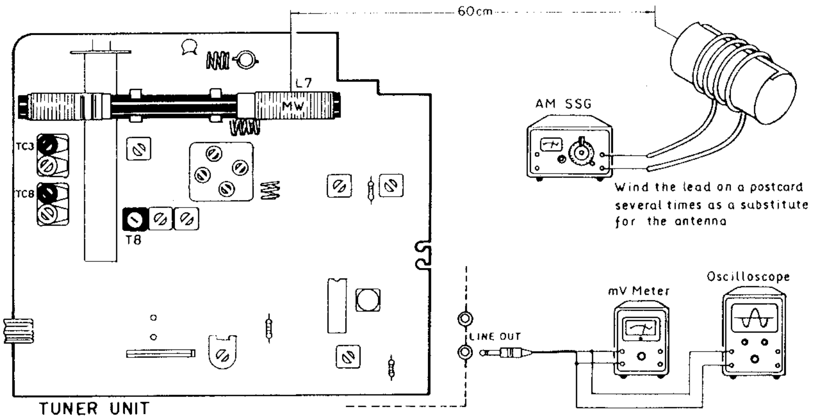

60cm
L7
MW
TC3
TC8
T8
AM SSG
Wind the lead on a postcard several times as a substitute for the antenna
mV Meter
Oscilloscope
LINE OUT
TUNER UNIT

Fig. 15

Switch, control positions

Function switch	TUNER
Band switch	MW
Balance	Center

Preparations

Adjustment can easily be performed once the capacity of the TC3 and TC8 trimmers is set to the center. Adjust with radio waves being emitted from an AM SSG (with a coil antenna being used).

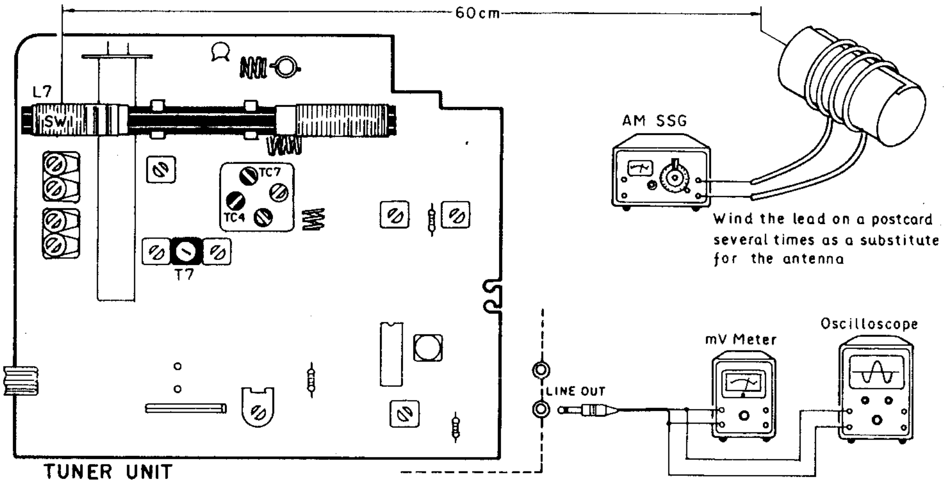
● To Adjust

Frequency of SSG	Variable Condenser Position	Adjusting Point	Remarks
1. 515 kHz (400 Hz, 30% modulation) output 60 dB/m.	Maximum (turn the tuning knob counterclockwise.)	T8	515 kHz can be received.
2. 1,650 kHz (400 Hz, 30% modulation) output 60 dB/m.	Minimum (turn the tuning knob clockwise.)	TC8	1,650 kHz can be received.
3. Repeat (1) and (2) alternately and adjust so that 515 ~ 1,650 kHz are received.			
4. 600 kHz (400 Hz, 30% modulation) output 40 ~ 50 dB/m.	Tuned to 600 kHz.	L7 (MW coil of bar antenna)	Maximum output.
5. 1,400 kHz (400 Hz, 30% modulation) output 40 ~ 50 dB/m.	Tuned to 1,400 kHz.	TC3	Maximum output.
6. Repeat (4) and (5) alternately and confirm that they are as specified.			

Note: After adjusting L7 (MW coil of bar antenna), melt electro wax with soldering iron and fix it in position.

5.6 SW1 TRACKING ADJUSTMENT

● Connection Diagram



Wind the lead on a postcard several times as a substitute for the antenna

Fig. 16

Switch, control positions

Function switch	TUNER
Band switch	SW1
Balance	Center

Preparations

Adjustment can easily be performed once the capacity of the TC4 and TC7 trimmers is set to the center. Adjust with radio waves being emitted from an AM SSG (with a coil antenna being used).

● To Adjust

Frequency of SSG	Variable Condenser Position	Adjusting Point	Remarks
1. 2.2 MHz (400 Hz, 30% modulation) output 40 ~ 60 dB/m.	Maximum (turn the tuning knob counterclockwise.)	T7	2.2 MHz can be received.
2. 7.3 MHz (400 Hz, 30% modulation) output 40 ~ 60 dB/m.	Minimum (turn the tuning knob clockwise.)	TC4	7.3 MHz can be received.
3. Repeat (1) and (2) alternately and adjust so that 2.2 ~ 7.3 MHz are received.			
4. 2.5 MHz (400 Hz, 30% modulation) output 40 ~ 50 dB/m.	Tuned to 2.5 MHz.	L7 (SW coil of bar antenna)	Maximum output.
5. 6.0 MHz (400 Hz, 30% modulation) output 40 ~ 50 dB/m.	Tuned to 6.0 MHz.	TC7	Maximum output.
6. Repeat (4) and (5) alternately and confirm that they are as specified.			

Note: After adjusting L7 (SW coil of bar antenna), melt electro wax with soldering iron and fix it in position.

5.7 SW2 TRACKING ADJUSTMENT

● Connection Diagram

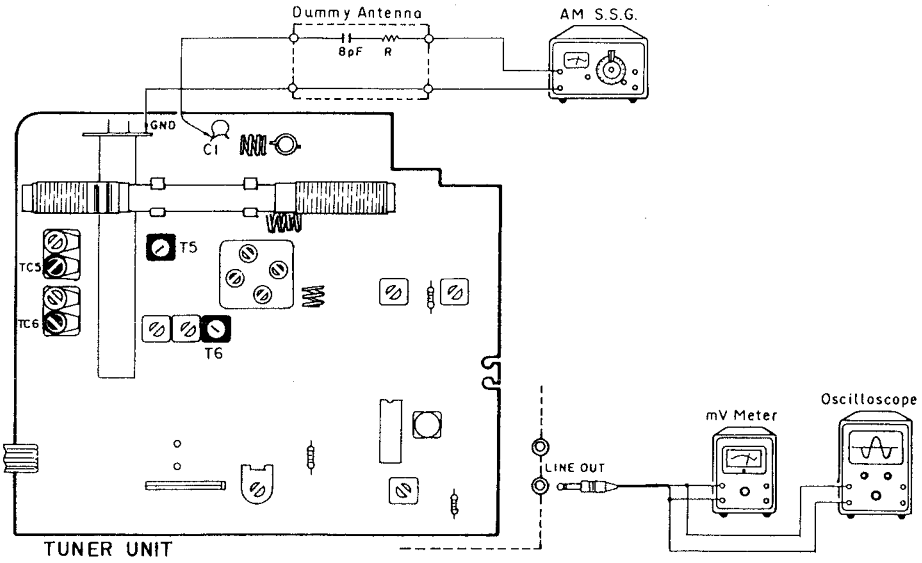


Fig. 17

Switch, control positions

Function switch	TUNER
Band switch	SW2
Balance	Center

Preparations

Adjustment can easily be performed once the capacity of the TC5 and TC6 variable condenser trimmers is set to the center.

● To Adjust

Frequency of SSG	Variable Condenser Position	Adjusting Point	Remarks
1. 6.8 MHz (400 Hz, 30% modulation) output 40 ~ 60 dB/m.	Maximum (turn the tuning knob counterclockwise.)	T6	6.8 MHz can be received.
2. 22.5 MHz (400 Hz, 30% modulation) output 40 ~ 60 dB/m.	Minimum (turn the tuning knob clockwise.)	TC6	22.5 MHz can be received.
3. Repeat (1) and (2) alternately and adjust so that 6.8 ~ 22.5 MHz are received.			
4. 7 MHz (400 Hz, 30% modulation) output 40 ~ 50 dB/m.	Tuned to 7 MHz.	T5	Maximum output.
5. 21 MHz (400 Hz, 30% modulation) output 40 ~ 50 dB/m.	Tuned to 21 MHz.	TC5	Maximum output.
6. Repeat (4) and (5) alternately and confirm that they are as specified.			

5.8 FM IF ADJUSTMENT

● Connection Diagram

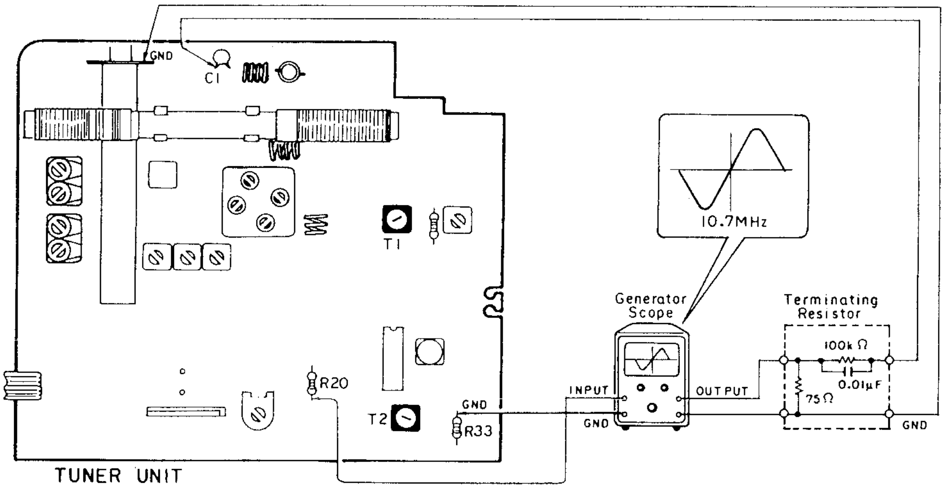

GND
C1
T1
R20
T2
GND
R33
TUNER UNIT
10.7MHz
Generator Scope
Terminating Resistor
100kΩ
0.01μF
75Ω
INPUT
OUTPUT
GND
GND

Fig. 18

Genarator Scope

Sweep center frequency	10.7 MHz
Input gain	0.3 Vp-p/cm
Marker	OFF or minimum

Switch, control positions

Function switch	TUNER
Band switch	FM
Balance	Center

● To Adjust

1. Apply an output of about 70 dB (μV) from the Generator Scope, adjust T1, T2 adjust so that the S curve becomes vertically symmetrical and otpimum linearity is obtained.

5.9 FM TRACKING ADJUSTMENT

● Connection Diagram

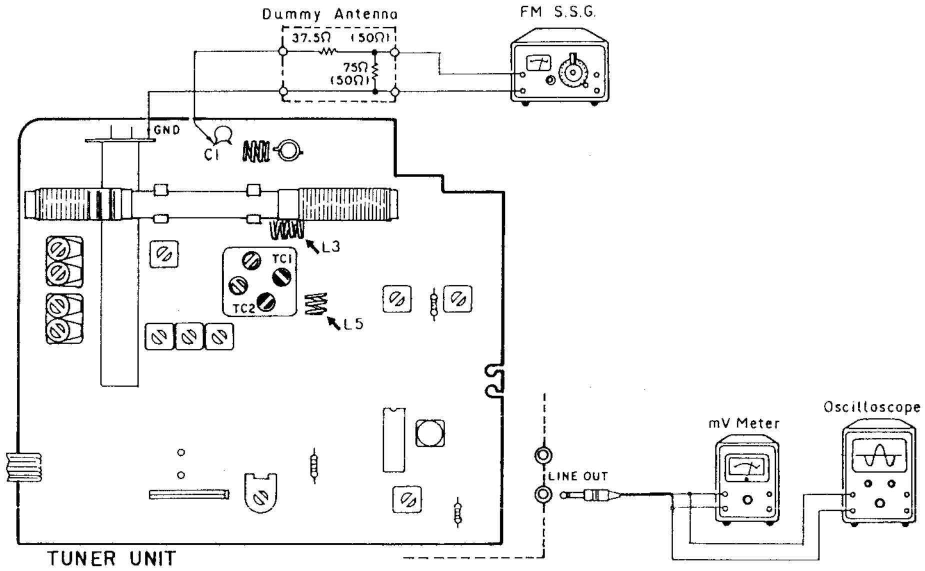

Dummy Antenna
37.5Ω (50Ω)
75Ω (50Ω)
FM S.S.G.
GND
C1
L3
TC1
TC2
L5
LINE OUT
mV Meter
Oscilloscope
TUNER UNIT

Fig. 19

Switch, control positions

Function switch	TUNER
Band switch	FM
Balance	Center
Volume control	Appropriate position

Preparations

Presetting variable trimmer capacitors TC1, TC2 to the center will facilitate the adjustments.

● To Adjust

Frequency of SSG	Variable Condenser Position	Adjusting Point	Remarks
1. 87 MHz (400 Hz, 75 kHz deviation) output 30 dB (μV).	Maximum (turn the tuning knob counterclockwise.)	L5	87 MHz can be received.
2. 109.5 MHz (400 Hz, 75 kHz deviation) output 30 dB (μV).	Minimum (turn the tuning knob clockwise.)	TC2	109.5 MHz can be received.
3. Repeat (1) and (2) alternately and adjust so that 87 ~ 109.5 MHz are received.			
4. 90 MHz (400 Hz, 75 kHz deviation) output 10 ~ 20 dB (μV).	Tuned to 90 MHz.	L3	Maximum output.
5. 106 MHz (400 Hz, 75 kHz deviation) output 10 ~ 20 dB (μV).	Tuned to 106 MHz.	TC1	Maximum output.
6. Repeat (4) and (5) alternately and adjust until tracking error disappears.			

● Coil (L3, L5) Adjustment

Adjust the coil spacing with the tuning wand (GGK-033) as shown in the figure.

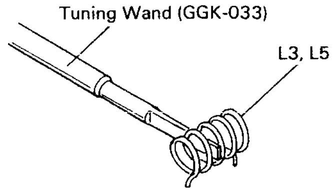

Tuning Wand (GGK-033)
L3, L5

Fig. 20

5.10 FM MPX ADJUSTMENT

● Connection Diagram

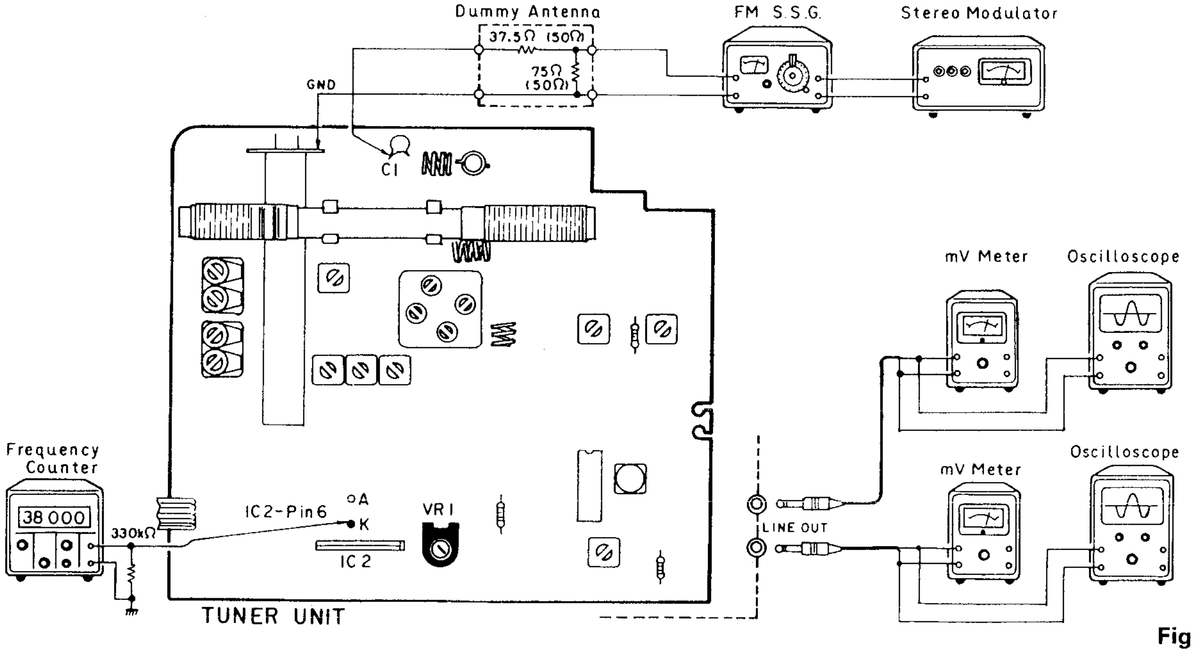

Dummy Antenna
37.5Ω (50Ω)
75Ω (50Ω)
FM S.S.G.
Stereo Modulator
GND
C1
mV Meter
Oscilloscope
Frequency Counter
38 000
330kΩ
IC2-Pin6
A
K
VR1
IC2
LINE OUT
TUNER UNIT

Fig. 21

MPX modulator

Modulation frequency	1 kHz
Modulation	100%
Pilot	7.5 kHz
Main	67.5 kHz

Switch positions

Function switch	TUNER
Band switch	FM

Note: Always set the band switch to FM.

● To Adjust

1. Apply 98 MHz 10 dB signal from the FM SSG, and rotate the tuning knob to tune into 98 MHz.
2. Set the FM SSG output to 60 dB and set the modulation to OFF.
3. Adjust VR1 so that the frequency counter indicates 38 kHz ±60 Hz.

6. DIAL STRINGING

1. Position the dial thread with reference to the figure. (Proceed in numerical order.)
2. When the thread has been positioned or when the variable condenser of the tuner circuit board or the pulley has been replaced, the cutout of the pulley and the projection of the variable condenser may be thrown out of alignment. In cases like this, first align the parts properly and then tighten the mounting screw. If the screw is too loose, the meter pointer may deviate.

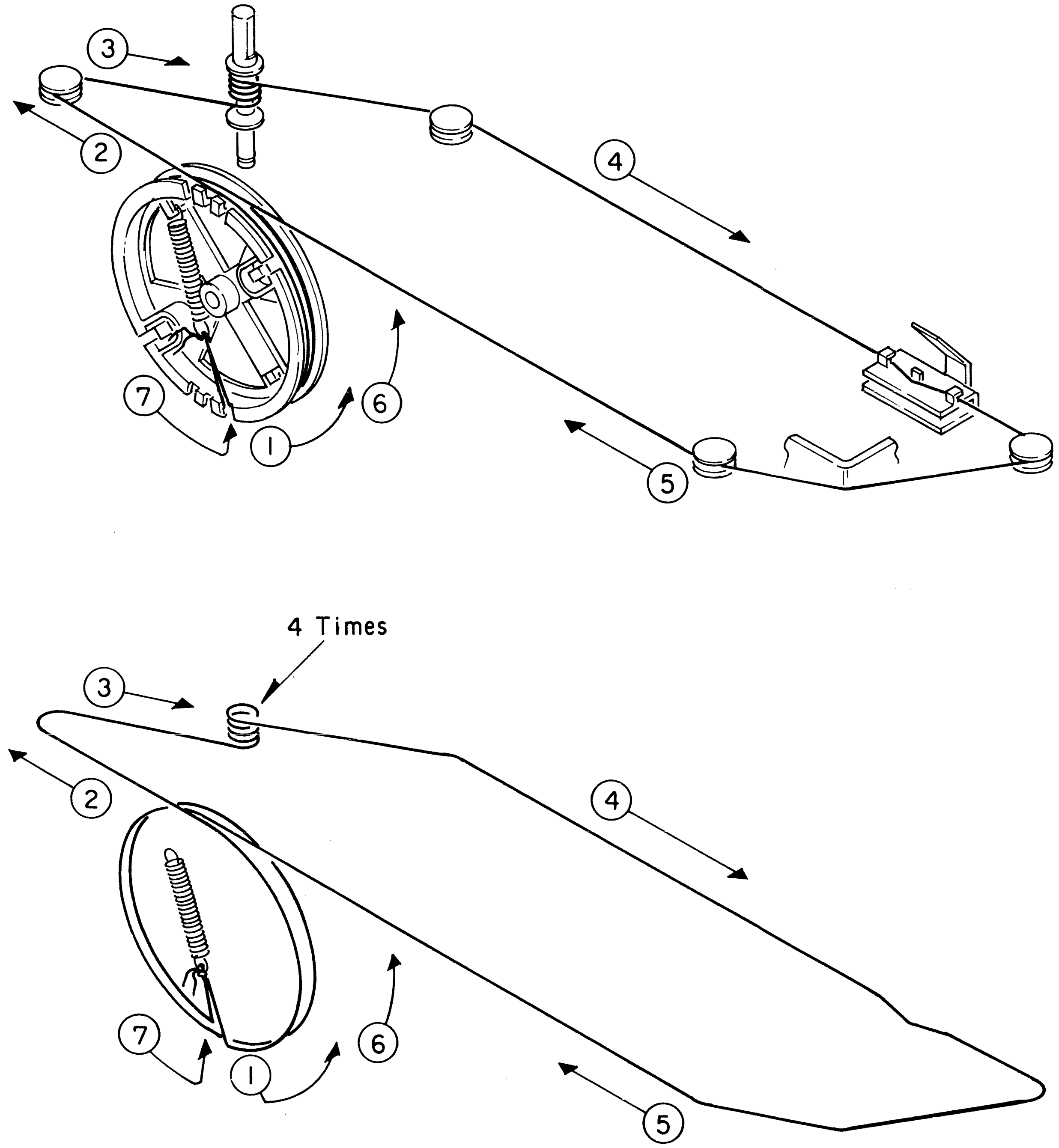
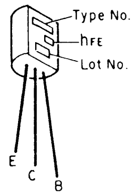
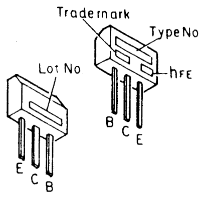

③
②
④
⑦
⑥
①
⑤
4 Times
③
②
④
⑥
⑦
①
⑤

Fig. 22

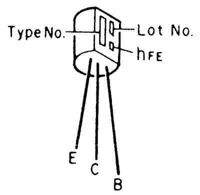
- **IC's and Transistors**


Type No.
hFE
Lot No.
E
C
B

2SD468

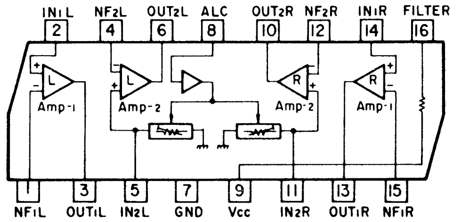

Trademark
Type No
Lot No
hFE
B C E
E C B

2SC535
2SC461

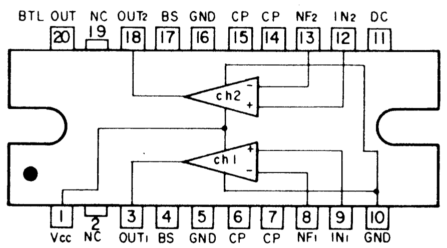

Type No.
Lot No.
hFE
E
C
B

2SC945
2SC1674
2SC1675
2SC1815

AF AMP UNIT

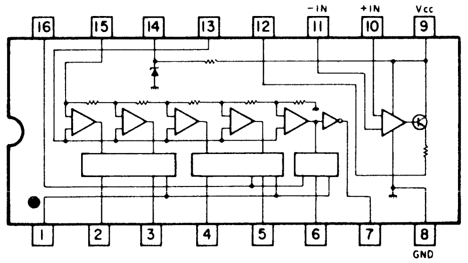

IN1L
NF2L
OUT2L
ALC
OUT2R
NF2R
IN1R
FILTER
2
4
6
8
10
12
14
16
L
L
R
R
Amp-1
Amp-2
Amp-2
Amp-1
1
3
5
7
9
11
13
15
NF1L
OUT1L
IN2L
GND
Vcc
IN2R
OUT1R
NF1R

IC1: M51542L


BTL OUT
NC
OUT2
BS
GND
CP
CP
NF2
IN2
DC
20
19
18
17
16
15
14
13
12
11
ch2
ch1
1
2
3
4
5
6
7
8
9
10
Vcc
NC
OUT1
BS
GND
CP
CP
NF1
IN1
GND

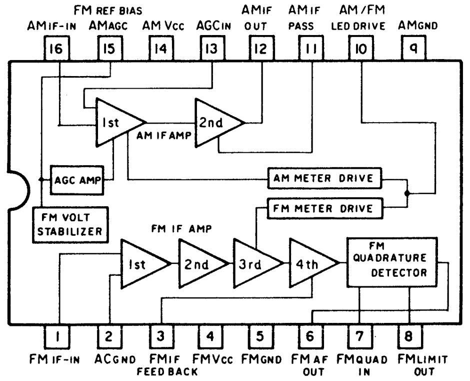
IC2: LA4125 or LA4125T

DISPLAY UNIT

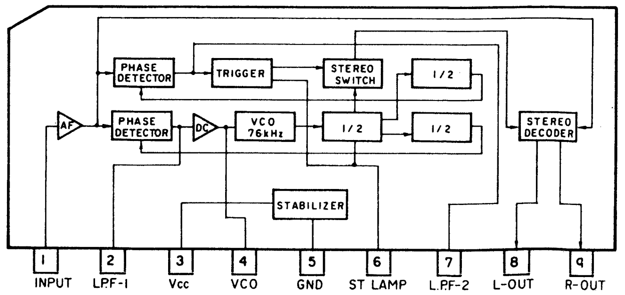

-IN
+IN
Vcc
16
15
14
13
12
11
10
9
1
2
3
4
5
6
7
8
GND

IC3: IR2E01

TUNER UNIT

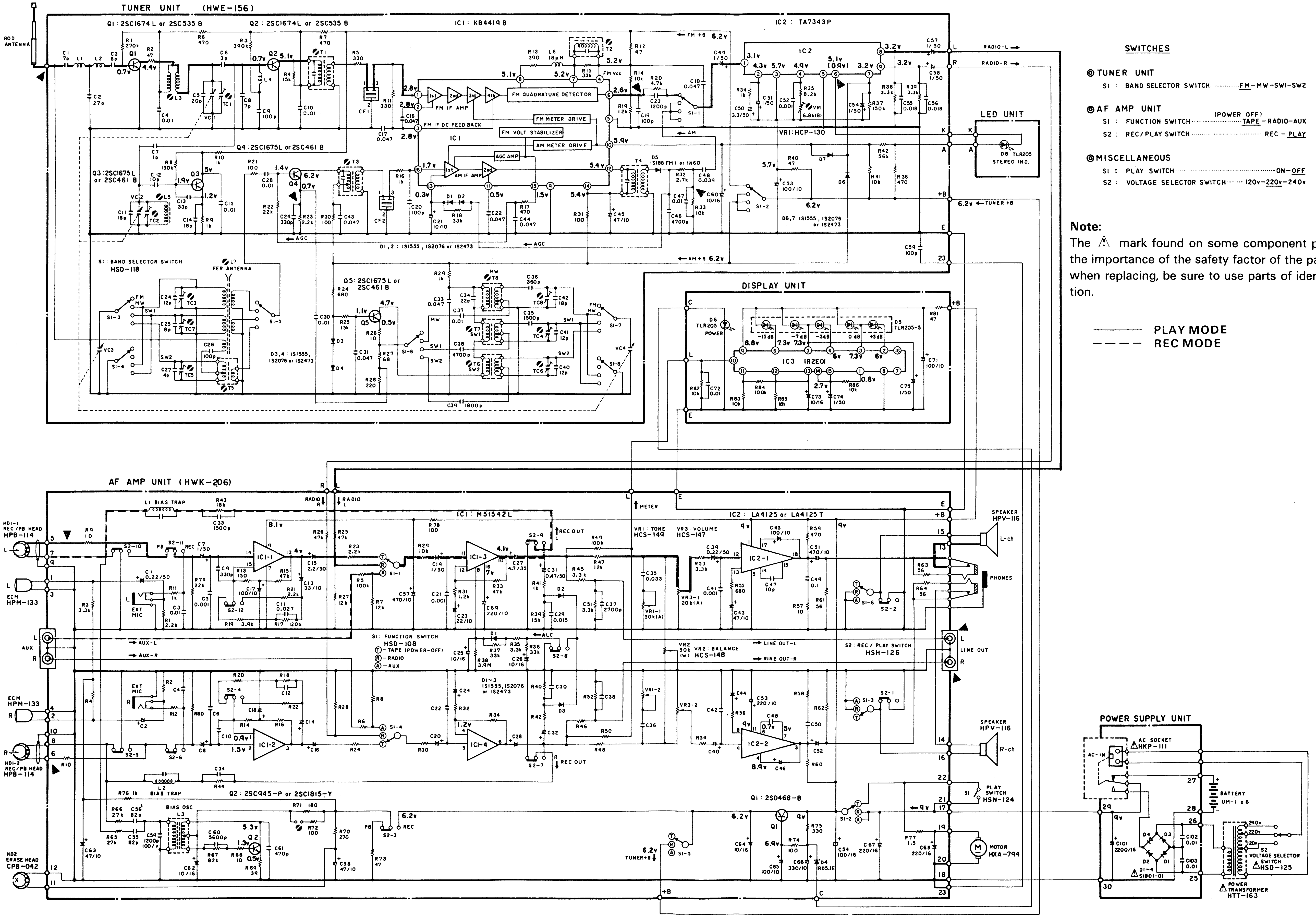

FM REF BIAS
AMIF-IN
AMAGC
AM Vcc
AGCIN
AMIF OUT
AMIF PASS
AM/FM LED DRIVE
AMGND
16
15
14
13
12
11
10
9
1st
2nd
AM IF AMP
AGC AMP
AM METER DRIVE
FM METER DRIVE
FM VOLT STABILIZER
FM IF AMP
1st
2nd
3rd
4th
FM QUADRATURE DETECTOR
1
2
3
4
5
6
7
8
FM IF-IN
ACGND
FMIF FEED BACK
FMVcc
FMGND
FM AF OUT
FMQUAD IN
FMLIMIT OUT

IC1: KB4419B


PHASE DETECTOR
TRIGGER
STEREO SWITCH
1/2
AF
PHASE DETECTOR
DC
VCO 76kHz
1/2
1/2
STEREO DECODER
STABILIZER
1
2
3
4
5
6
7
8
9
INPUT
LPF-1
Vcc
VCO
GND
ST LAMP
L.PF-2
L-OUT
R-OUT

IC2: TA7343P

7. SCHEMATIC CIRCUIT DIAGRAM


TUNER UNIT (HWE-156)
ROD ANTENNA
Q1 : 2SC1674L or 2SC535 B
Q2 : 2SC1674L or 2SC535 B
IC1 : KB4419 B
IC2 : TA7343P
Q3 : 2SC1675L or 2SC461 B
Q4 : 2SC1675L or 2SC461 B
Q5 : 2SC1675L or 2SC461 B
FM QUADRATURE DETECTOR
FM IF AMP
FM IF DC FEED BACK
FM METER DRIVE
FM VOLT STABILIZER
AM METER DRIVE
AGC AMP
AM IF AMP
VR1 : HCP-130
D1, 2 : 1S1555, 1S2076 or 1S2473
D3, 4 : 1S1555, 1S2076 or 1S2473
D6, 7 : 1S1555, 1S2076 or 1S2473
S1 : BAND SELECTOR SWITCH HSD-118
FER ANTENNA
LED UNIT
D8 TLR205 STEREO IND.
DISPLAY UNIT
D6 TLR205 POWER
D5 TLR205-5
IC3 IR2E01
RADIO-L
RADIO-R
TUNER +B
AF AMP UNIT (HWK-206)
L1 BIAS TRAP
IC1 : M51542L
IC2 : LA4125 or LA4125T
HD1-1 REC/PB HEAD HPB-114
ECM HPM-133
EXT MIC
AUX
VR1 : TONE HCS-149
VR3 : VOLUME HCS-147
VR2 : BALANCE HCS-148
S1 : FUNCTION SWITCH HSD-108
Ⓣ-TAPE (POWER-OFF)
Ⓡ-RADIO
Ⓐ-AUX
S2 : REC / PLAY SWITCH HSH-126
LINE OUT
REC OUT
METER
SPEAKER HPV-116
PHONES
HD1-2 REC/PB HEAD HPB-114
HD2 ERASE HEAD CPB-042
L2 BIAS TRAP
Q2 : 2SC945-P or 2SC1815-Y
BIAS OSC
Q1 : 2SD468-B
PLAY SWITCH HSN-124
MOTOR HXA-794
POWER SUPPLY UNIT
AC SOCKET ⚠HKP-111
AC-IN
BATTERY UM-1 x 6
D1~4 ⚠S1B01-01
S2 VOLTAGE SELECTOR SWITCH ⚠HSD-125
⚠POWER TRANSFORMER HTT-163
240v
220v
120v

SWITCHES

◎ TUNER UNIT
S1 : BAND SELECTOR SWITCH FM-MW-SW1-SW2

◎ AF AMP UNIT
(POWER OFF)
S1 : FUNCTION SWITCH .... TAPE-RADIO-AUX
S2 : REC/PLAY SWITCH .... REC-PLAY

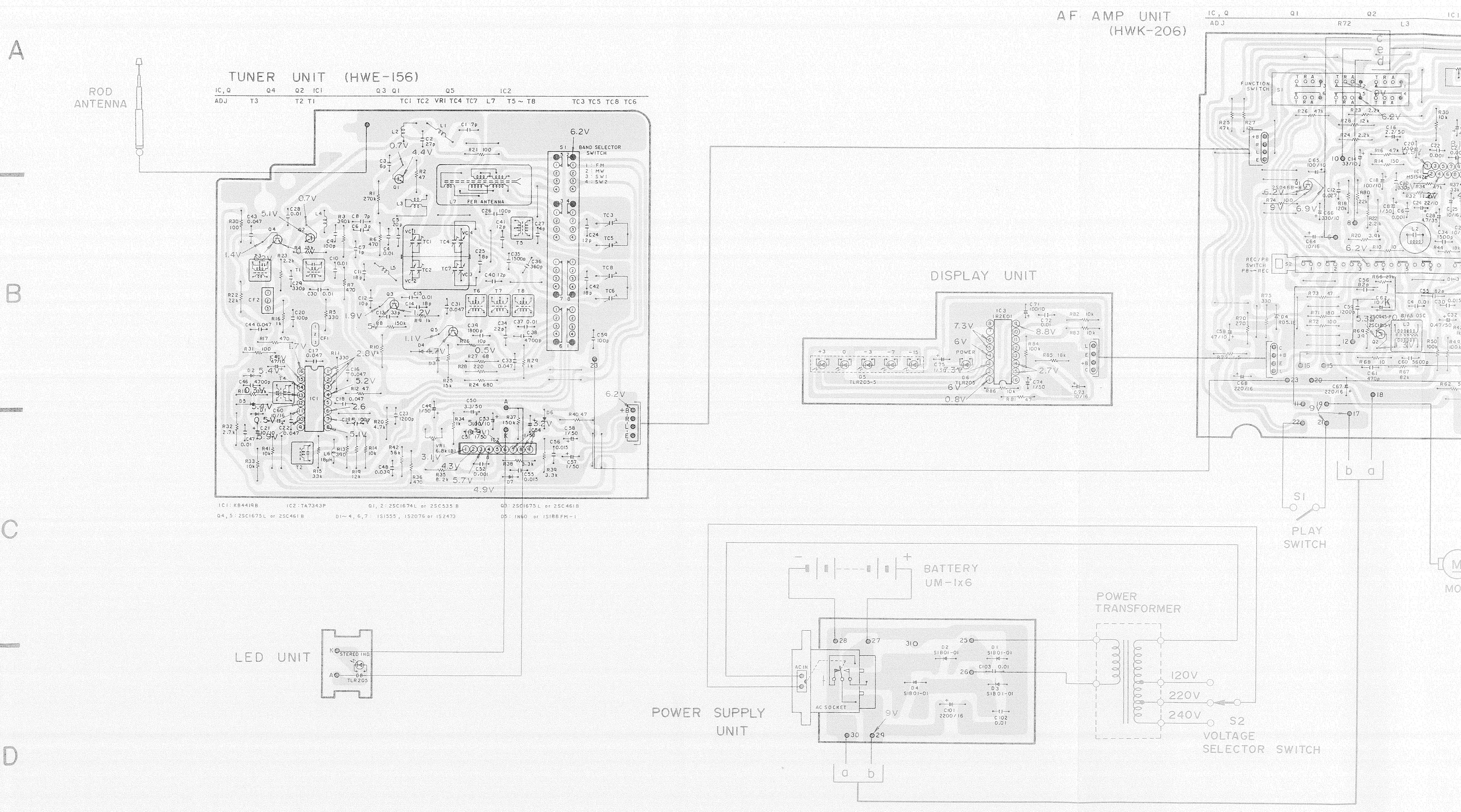
◎ MISCELLANEOUS
S1 : PLAY SWITCH .... ON-OFF
S2 : VOLTAGE SELECTOR SWITCH 120v-220v-240v

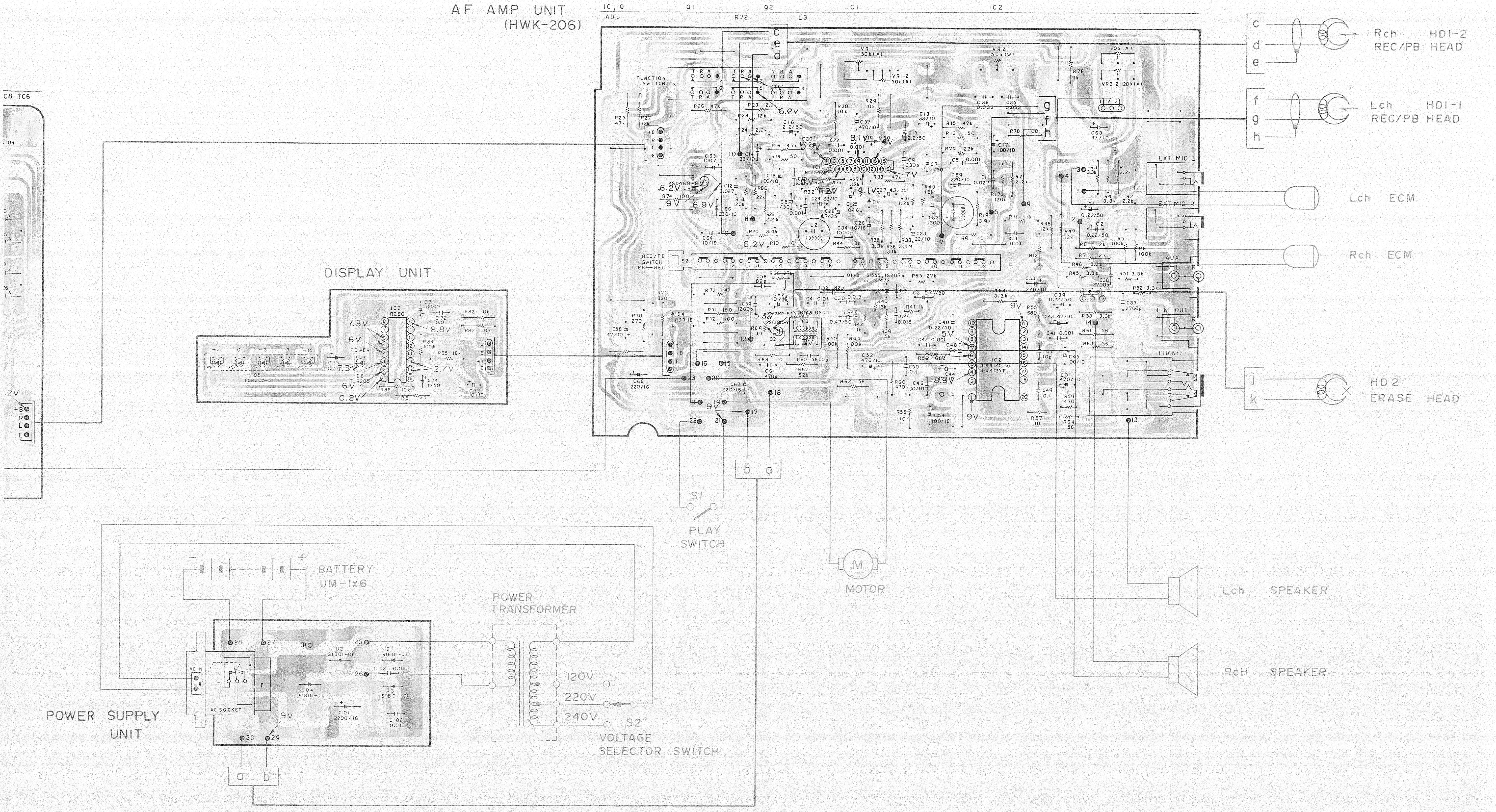
Note:
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designetion.

——— PLAY MODE
– – – – REC MODE

Fig. 23

8. CONNECTION DIAGRAM


ROD ANTENNA
TUNER UNIT (HWE-156)
BAND SELECTOR SWITCH
1 : FM
2 : MW
3 : SW1
4 : SW2
FER ANTENNA
IC1 : KB4419B IC2 : TA7343P Q1, 2 : 2SC1674L or 2SC535 B Q3 : 2SC1675L or 2SC461 B
Q4, 5 : 2SC1675L or 2SC461 B D1 ~ 4, 6, 7 : 1S1555, 1S2076 or 1S2473 D5 : 1N60 or 1S188FM-1
DISPLAY UNIT
AF AMP UNIT (HWK-206)
FUNCTION SWITCH
REC/PB SWITCH
LED UNIT
STEREO IND.
TLR205
BATTERY UM-1x6
POWER SUPPLY UNIT
AC IN
AC SOCKET
POWER TRANSFORMER
120V
220V
240V
S2
VOLTAGE SELECTOR SWITCH
S1
PLAY SWITCH
a
b


3
4
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8
9
A
B
C
D
AF AMP UNIT
(HWK-206)
IC, Q
ADJ
Q1
R72
Q2
L3
IC1
IC2
FUNCTION SWITCH
REC/PB SWITCH PB—REC
DISPLAY UNIT
IC3
TLR205
7.3V
6V
8.8V
2.7V
0.8V
Rch HDI-2 REC/PB HEAD
Lch HDI-1 REC/PB HEAD
EXT MIC L
EXT MIC R
Lch ECM
Rch ECM
AUX
LINE OUT
PHONES
HD2 ERASE HEAD
S1
PLAY SWITCH
MOTOR
Lch SPEAKER
RcH SPEAKER
BATTERY UM-1x6
POWER TRANSFORMER
120V
220V
240V
S2
VOLTAGE SELECTOR SWITCH
POWER SUPPLY UNIT
AC IN
AC SOCKET
9V
a
b

Fig. 24

9. CABINET EXPLODED VIEW

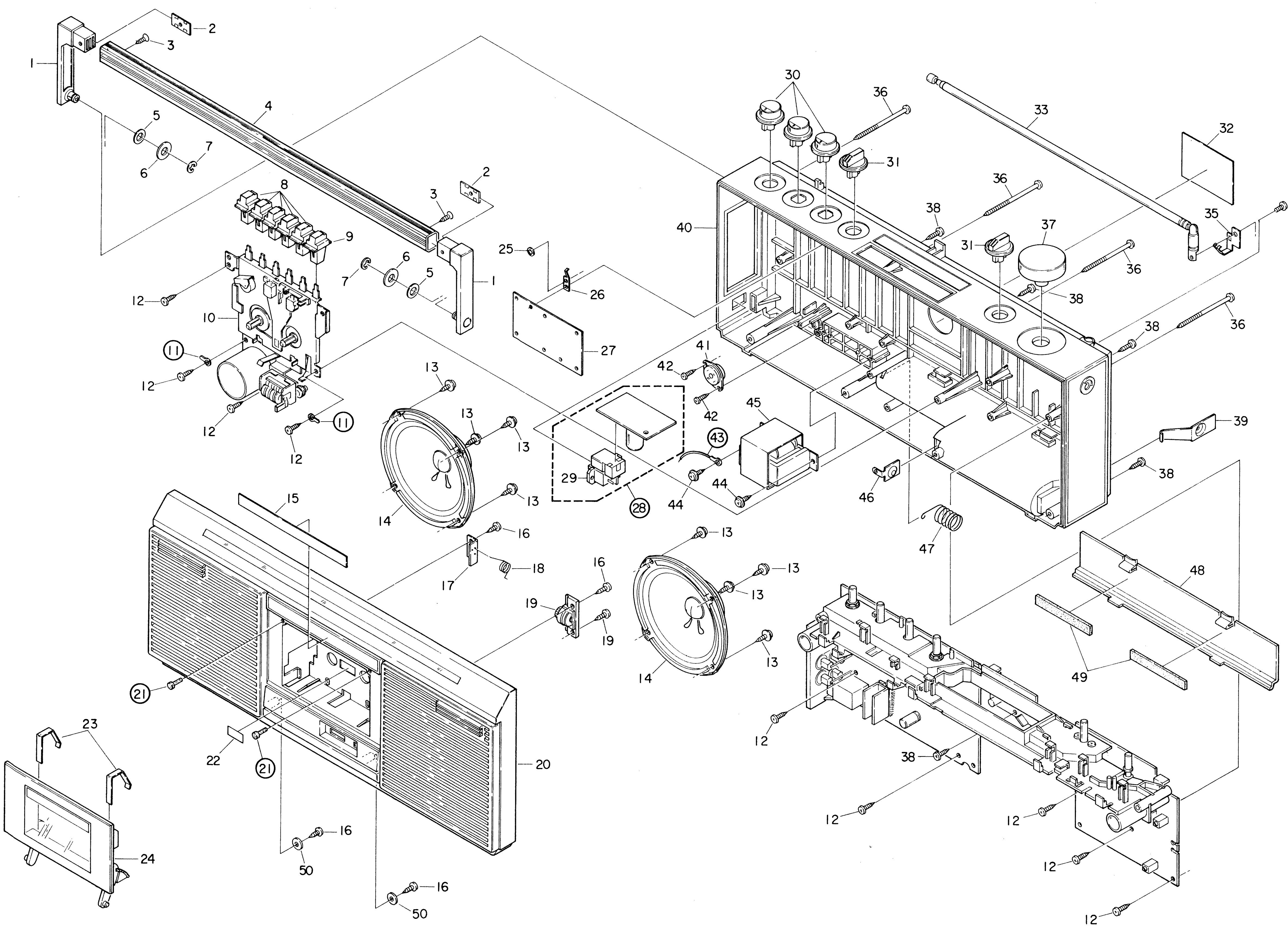
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Fig. 25

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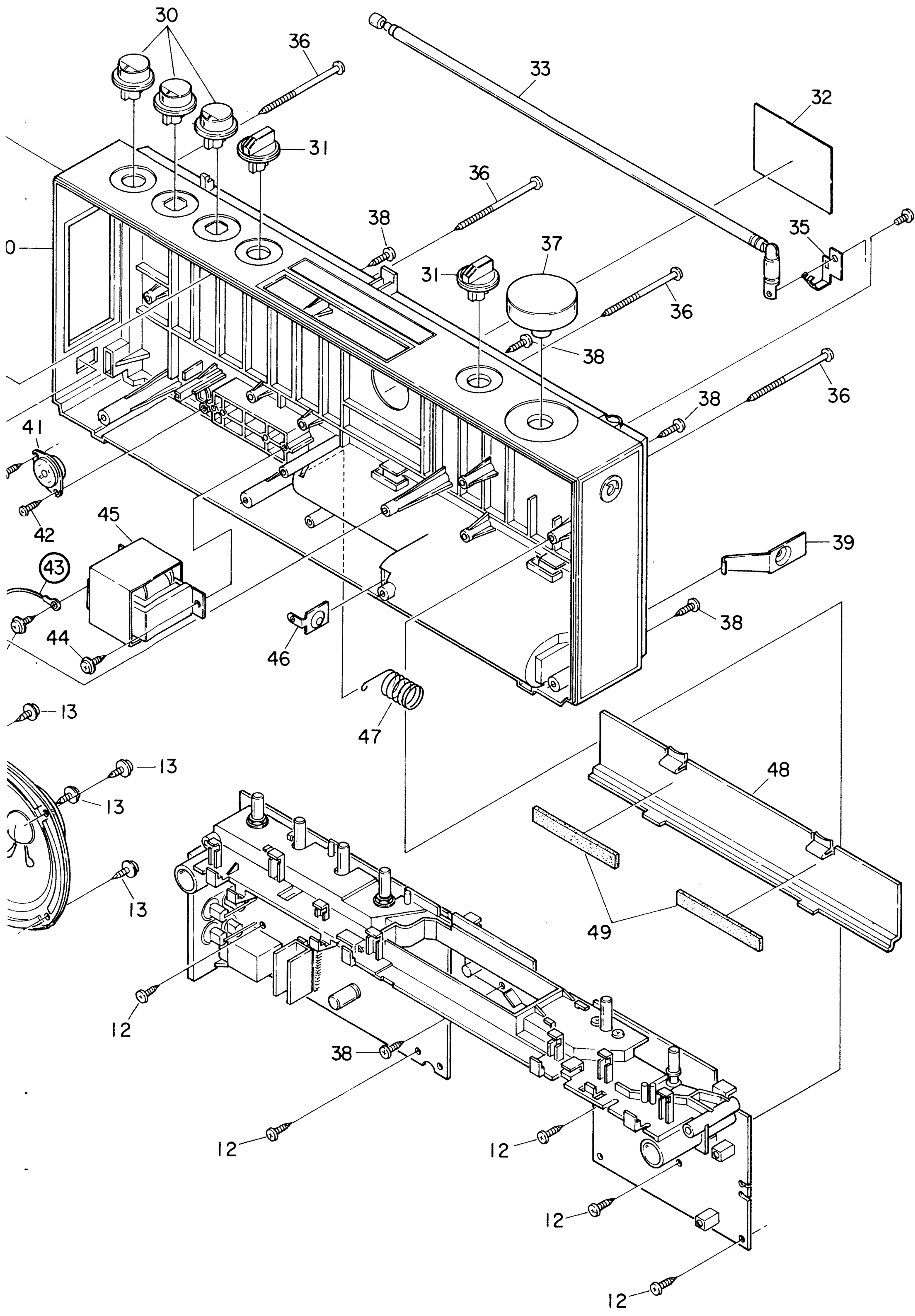

Fig. 25

PARTS LIST

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.*
  ★ ★ : GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

Cabinet

Mark	No.	Part No.	Description
	1.	HNS-536	Holder
	2.	HNC-615	Spacer
	3.	CMZ30P100FBK	Screw
	4.	HNS-535	Grip
	5.	HBL-163	Spring
	6.	WB80FMC	Washer
	7.	YE-60FMC	Washer
★	8.	HAC-260	Button (PAUSE, STOP/ EJECT, FF, REW, PLAY)
★	9.	HAC-261	Button (REC)
	10.	HXA-800	Cassette Mechanism Assy
	11.		Washer
	12.	BNC30P080FMC	Screw
	13.	BLM30P080FMC	Screw
★★	14.	HPV-116	Speaker
	15.	HNB-197	Plate
	16.	BNC30P100FMC	Screw
	17.	HNC-577	Holder
	18.	HBH-346	Spring
	19.	HNV-516	Damper
	20.	HXA-799	Front Case Assy
	21.		Damper
	22.	HNM-340	Seal
	23.	HBL-156	Spring
★★	24.	HNS-538	Door Assy
	25.	YS20FBK	Washer
	26.	HBL-162	Spring
	27.	HNM-328	Shield Plate
	28.		Power Supply Unit
⚠	29.	HKP-111	AC Socket
★	30.	HAA-196	Knob (VOLUME, BALANCE, TONE)
★	31.	HAA-197	Knob (BAND, FUNCTION)
	32.	HAL-352	Plate
	33.	HDX-110	Antenna
	34.	PMZ30P080FBK	Screw
	35.	HBL-155	Terminal
	36.	HBA-133	Screw
★	37.	HAA-195	Knob (TUNING)
	38.	BNC30P160FMC	Screw
	39.	CBL-161	Terminal
	40.	HNS-554	Rear Case
⚠ ★★	41.	HSD-125	Switch (Voltage Selector)
	42.	BNC26P080FMC	Screw
	43.		Clamper
	44.	BNM30P120FMC	Screw
⚠ ★	45.	HTT-163	Power Transformer
	46.	HNS-578	Terminal
	47.	HBH-348	Spring
	48.	HNS-357	Cover
	49.	HNM-321	Cushion
	50.	HBE-123	Washer

1 2 3 4 5 6

10. CHASSIS EXPLODED VIEW

A

B

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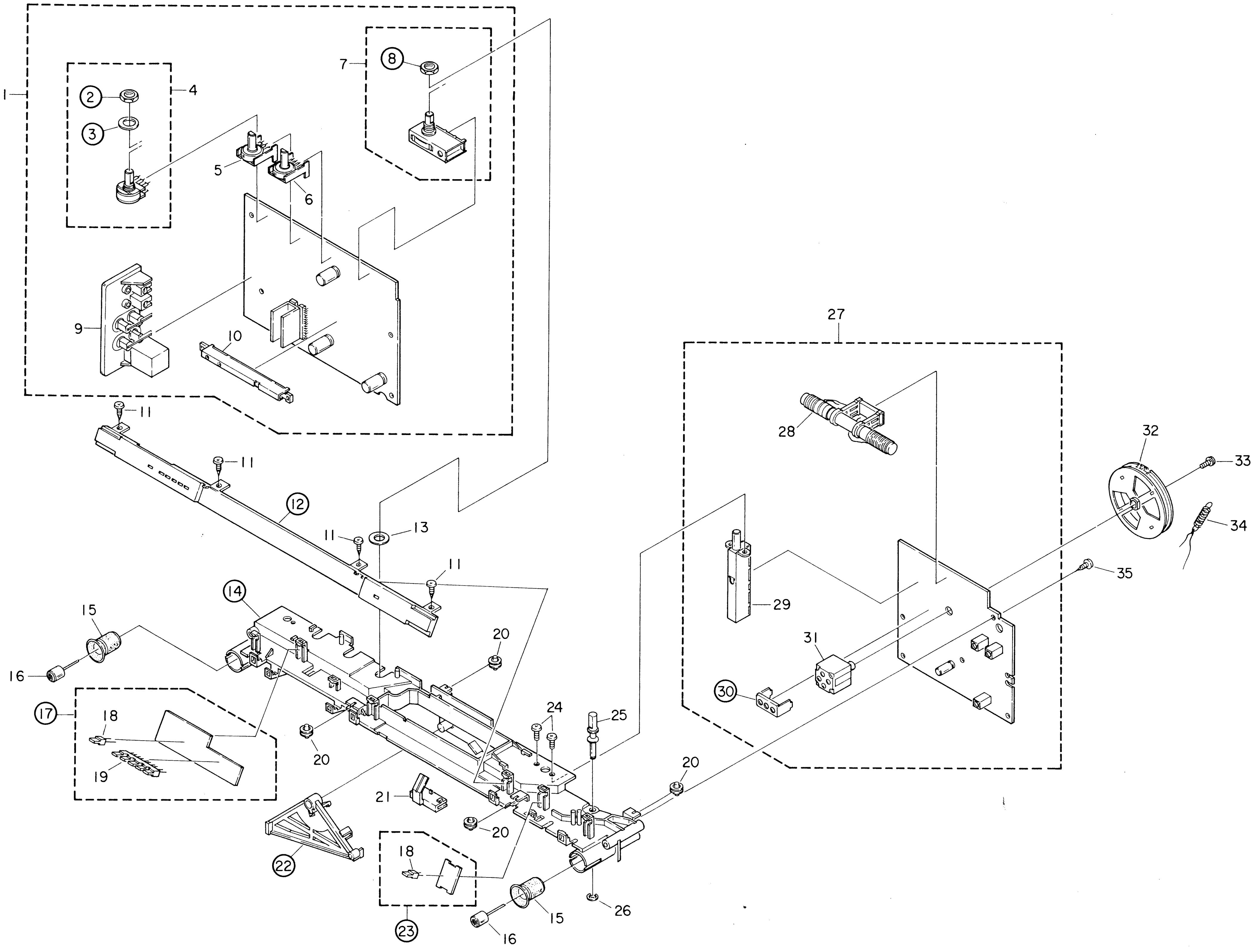
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Fig. 26

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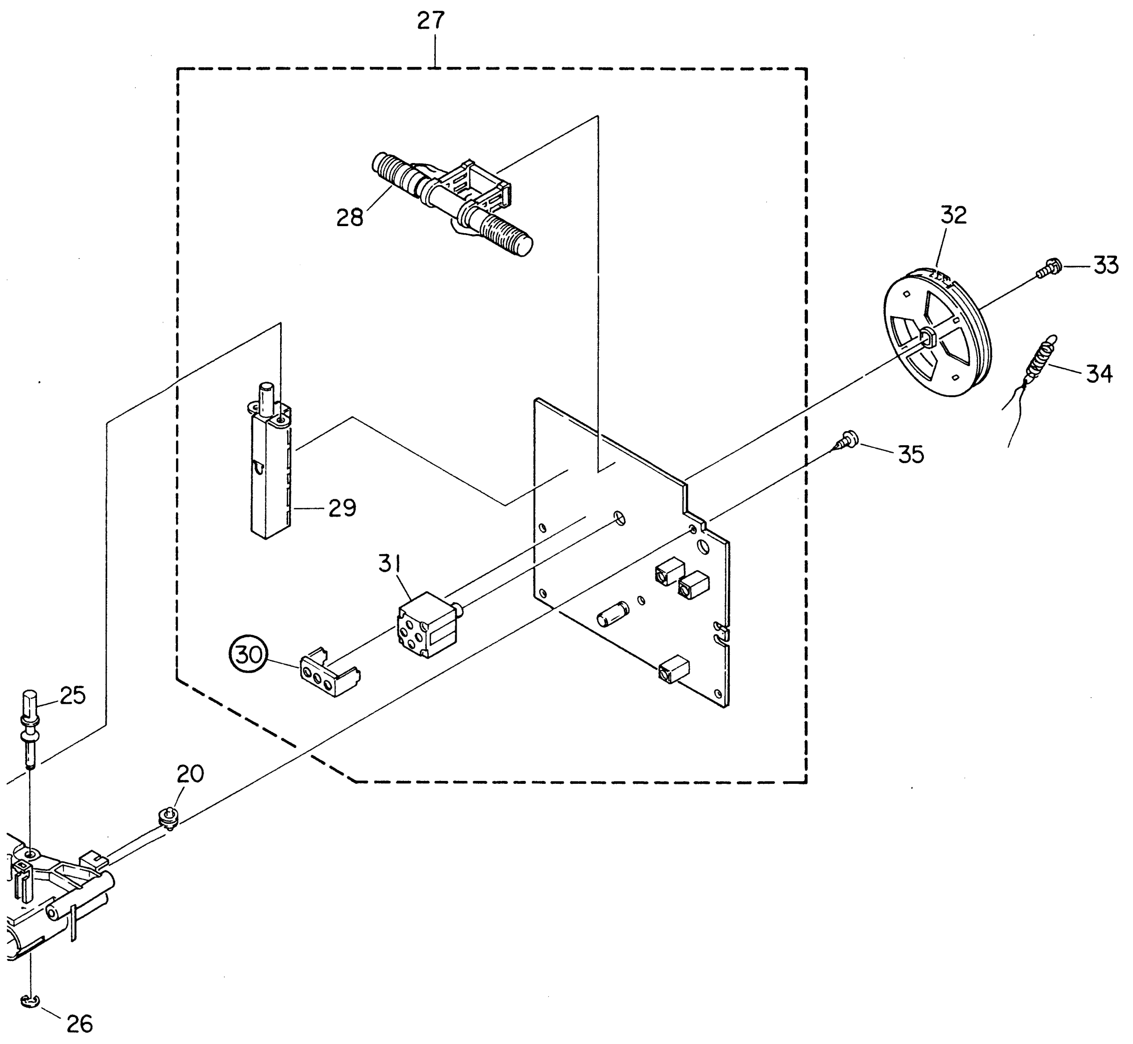

Fig. 26

PARTS LIST

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ : GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

Chassis

Mark	No.	Part No.	Description
	1.	HWK-206	AF Amp Unit
	2.		Nut
	3.		Washer
★	4.	HCS-147	Volume, 20 kΩ(A)(VOLUME)
★	5.	HCS-148	Volume, 50 kΩ(W)(BALANCE)
★	6.	HCS-149	Volume, 50 kΩ(A)(TONE)
★★	7.	HSD-108	Switch (FUNCTION)
	8.		Nut
	9.	HKN-135	Jack Unit
★★	10.	HSH-126	Switch (REC/PLAY)
	11.	BNC26P080FMC	Screw
	12.		Plate
	13.	HBE-122	Washer
	14.		Chassis
	15.	CNV-799	Holder
	16.	HPM-133	Microphone Assy
	17.		Display Unit
	18.	TLR205	LED
	19.	TLR205-5	LED
	20.	CNV-800	Pulley
	21.	HAF-119	Pointer
	22.		Lever
	23.		LED Unit
	24.	BMZ30P060FMC	Screw
	25.	HLA-312	Shaft
	26.	YE30FMC	Washer
	27.	HWE-156	Tuner Unit
	28.	HTB-152	Bar Antenna Assy
★★	29.	HSD-118	Switch (BAND)
	30.		Shield Plate
	31.	HCL-116	Variable Condenser
	32.	CNV-802	Pulley
	33.	PMA26P060FMC	Screw
	34.	CBH-135	Spring
	35.	BNC30P100FMC	Screw

11. CASSETTE MECHANISM EXPLODED VIEW

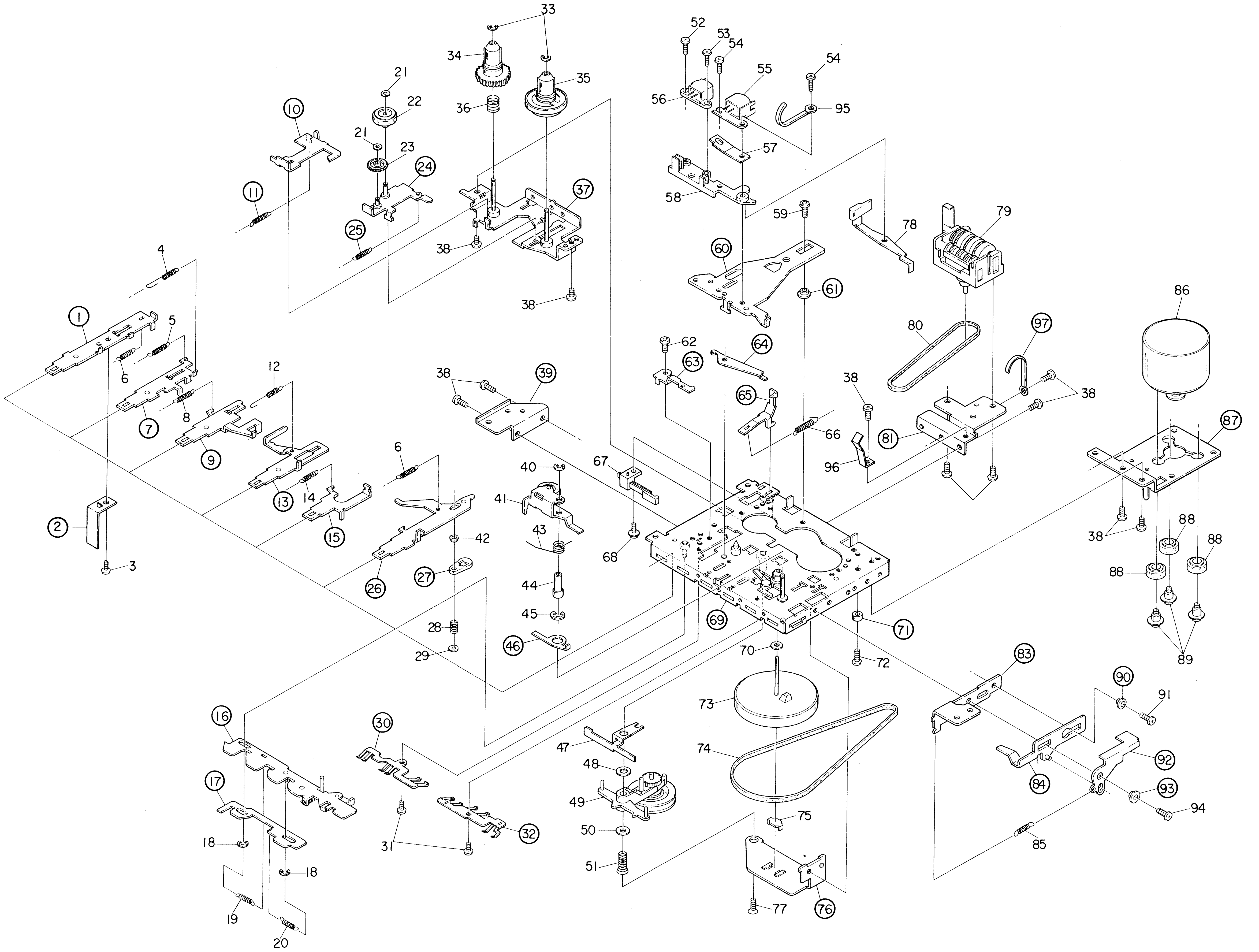
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Fig. 27

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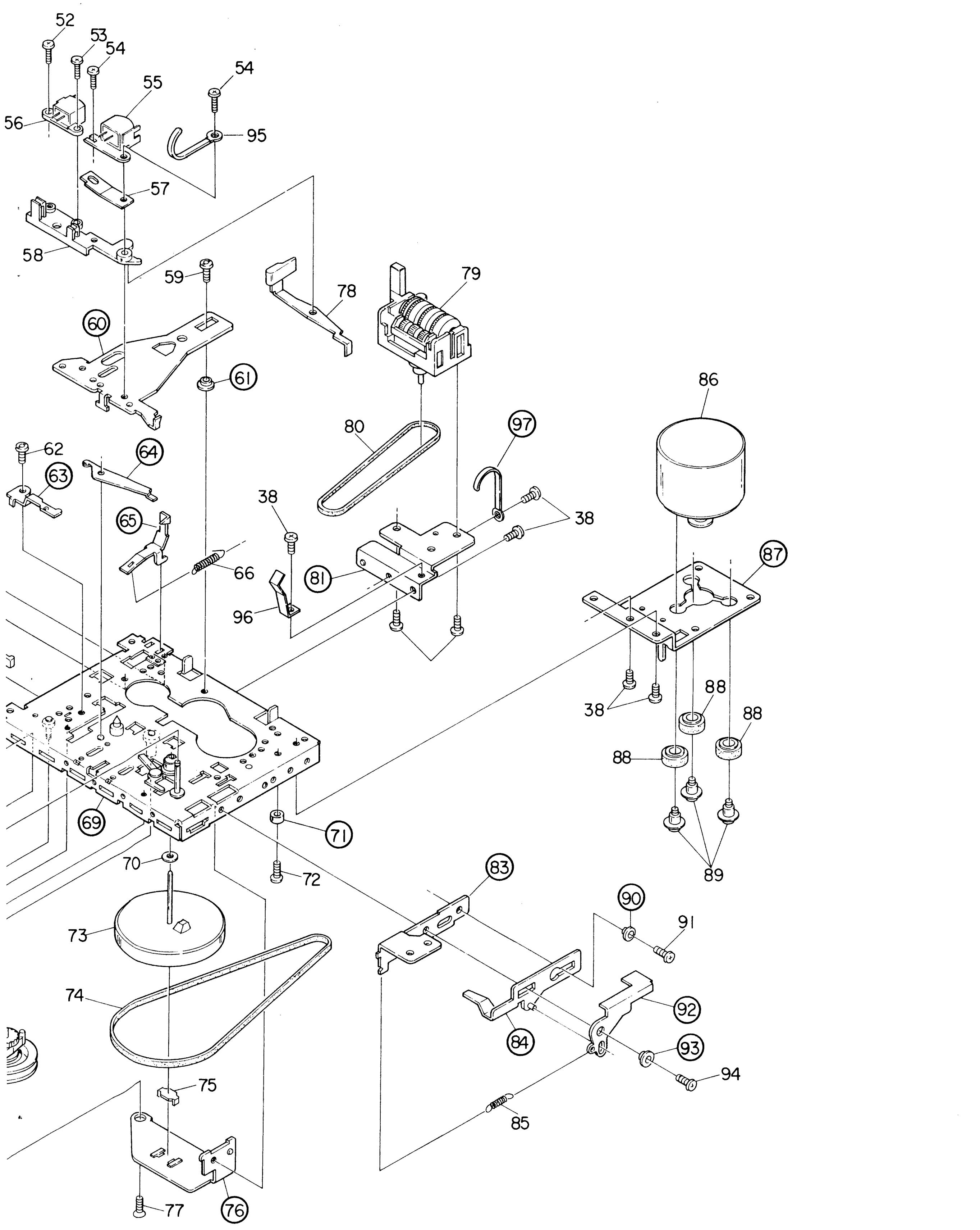

Fig. 27

PARTS LIST

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.*
  ★ ★ : GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

Cassette Mechanism

Mark	No.	Part No.	Description
	1.		Lever
	2.	HBL-157	Spring
	3.	PMZ20P030FMC	Screw
	4.	HBH-246	Spring
	5.	HBH-241	Spring
	6.	HBH-242	Spring
	7.		Lever
	8.	HBH-240	Spring
	9.		Lever
	10.		Plate
	11.		Spring
	12.	HBH-239	Spring
	13.		Lever
	14.	HBH-238	Spring
	15.		Lever
	16.		Lever Unit
	17.		Lever
	18.	YE23FUC	Washer
	19.	HBH-236	Spring
	20.	HBH-237	Spring
	21.	WA12D030D025	Washer
	22.	HNV-290	Roller
	23.	HNV-187	Gear
	24.		Arm Unit
	25.		Spring
	26.		Lever
	27.	HNV-178	Lever
	28.	HBH-151	Spring
	29.	WA17N050R040	Washer
	30.		Spring
	31.	HBA-131	Screw, M2 × 2
	32.		Spring
	33.	YE12FUC	Washer
★★	34.	HXA-609	Reel Unit
★★	35.	HXA-608	Reel Unit
	36.	HBH-234	Spring
	37.		Bracket Unit
	38.	PGZ26G050FMC	Screw
	39.		Bracket
	40.	YE20FUC	Washer
★★	41.	HXA-619	Roller Unit
	42.	HLA-240	Collar
	43.	HBH-244	Spring
	44.	HLA-241	Spacer
	45.	YE40FUC	Washer
	46.		Arm
	47.	HBL-133	Spring
	48.	WA40N080C030	Washer
	49.	HXA-871	Clutch Unit
	50.	WC30P	Washer
	51.	HBH-243	Spring
	52.	PMZ20P080FMC	Screw
	53.	PRZ20P070FMC	Screw
	54.	PMZ20Y070FMC	Screw
★★	55.	HPB- 114	Head
★★	56.	CPB-042	Head
	57.	HBL-129	Spring
	58.	HNV-291	Head Base
	59.	BCZ26G050FMC	Screw
	60.		Plate
	61.		Collar
	62.	BCZ26G030FMC	Screw
	63.		Bracket
	64.		Lever
	65.		Lever
	66.	HBH-235	Spring
★★	67.	HSN-124	Switch
	68.	DCZ20P050FMC	Screw
	69.		Chassis
	70.	HBE-125	Washer
	71.		Collar
	72.	PCZ26G050FMC	Screw
	73.	HNR-143	Flywheel
★★	74.	HNT-122	Belt
	75.	HNV-184	Spacer
	76.		Bracket
	77.	CMZ26P080FMC	Screw
	78.	HXA-610	Lever
	79.	HAW-134	Counter
★★	80.	HNT-123	Belt

Mark	No.	Part No.	Description
	81.		Bracket Unit
	82.	CMZ30P060FMC	Screw
	83.		Bracket
	84.		Lever Unit
	85.	HBH-245	Spring
★★	86.	HXA-794	Motor Unit
	87.		Bracket
	88.	HNV-185	Rubber
	89.	HLP-106	Screw
	90.		Collar

Mark	No.	Part No.	Description
	91.	PCZ26G060FMC	Screw
	92.		Lever
	93.		Collar
	94.	PCZ26G080FMC	Screw
	95.	HEF-106	Clamper
	96.	HBL-171	Spring
	97.		Clamper

12. ELECTRICAL PARTS LIST

NOTE:

When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω 56 × 10^1 561.................... RD1/4PS $\boxed{5}\boxed{6}\boxed{1}$ J
47 kΩ 47 × 10^3 473.................... RD1/4PS $\boxed{4}\boxed{7}\boxed{3}$ J
0,5Ω 0R5.. RN2H $\boxed{0}\boxed{R}\boxed{5}$ K
1Ω 010.. RS1P $\boxed{0}\boxed{1}\boxed{0}$ K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62 kΩ 562 × 10^1 .... RN1/4SR $\boxed{5}\boxed{6}\boxed{2}\boxed{1}$ F

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.*
  ★ ★ : GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

Tuner Unit (HWE-156)

MISCELLANEOUS

Mark	Part No.	Symbol & Description	
★★	KB4419B	IC1	
★★	TA7343P	IC2	
★★	2SC1674-L or 2SC535-B	Q1, Q2	
★★	2SC1675-L or 2SC461-B	Q3 – Q5	
★	1S1555 or 1S2076 or 1S2473	D1 – D4, D6, D7	
★	1N60 or 1S188FM-1	D5	
	HTC-179	L1	Coil
	HTC-180	L2	Coil
	HTC-181	L3	Coil
	HTH-120	L4	Coil
	HTC-182	L5	Coil
	CTF-071	L6	Ferri-Inductor, 18μH
	HTB-152	L7	Bar Antenna Assy
	CTC-028 or CTC-040	T1	Coil
	HTC-191 or HTC-190	T2	Coil
	HTE-133 or HTE-125	T3	Coil
	HTE-134 or HTE-126	T4	Coil
	HTA-109 or HTA-106	T5	Coil
	HTA-110 or HTA-107	T6	Coil
	HTA-111 or HTA-108	T7	Coil
	HTB-156 or HTB-155	T8	Coil
	HCL-116	VC1 – VC4, TC1, TC2, TC4, TC7	Variable Condenser
	HCL-115	TC3, TC5, TC6, TC8	
	CTF-040	CF1	Ceramic Filter
	HTF-122	CF2	Ceramic Filter
★	HCP-130	VR1	Semi-fixed, 6.8 kΩ(B)
★★	HSD-118	S1	Switch (BAND)

RESISTORS

Mark	Part No.	Symbol & Description
	RD1/4HM□□□J	R1 – R42

CAPACITORS

Mark	Part No.	Symbol & Description
	CCDSL070D50	C1, C8
	CCDSL270K50	C2
	CCDSL060D50	C3
	CKDYF103Z25	C4, C10, C28, C47
	CCDSH200J50	C5
	CCDSL030D50	C6
	CCDSL010C50	C7
	CKDYB101K50	C9, C19, C20, C26, C59
	CCDCH180J50	C11
	CCDSH100K50	C12, C24
	CCDSH330K50	C13
	CCDSH187K50	C14, C42
	CKDYD103M50	C15, C30, C37
	CKDYF473Z25	C16, C17, C22, C31, C33, C43, C44
	CKDBC473M25	C18
	CEA100P16	C21, C60
	CKDYB122K50	C23
	CCDSH060D50	C25
	CCDSH040D50	C27
	CKDYB331K50	C29
	VACANT	C32
	CCDSL220K50	C34
	CQSH152J50	C35
	CQSH361J50	C36
	CQMA472K50	C38, C46
	CQMA182K50	C39
	CCDTH150J50	C40
	CCDTH120J50	C41
	CEA470P10	C45
	CKDBC393M25	C48
	CEA010P50	C49, C51, C54, C57, C58
	CEA3R3P50	C50
	CQSH102K50	C52
	CEA101P10	C53
	CKDBC153M25	C55, C56

AF Amp Unit (HWK-206)

MISCELLANEOUS

Mark	Part No.	Symbol & Description
★★	M51542L	IC1
★★	LA4125 or LA4125T	IC2
★★	2SD468	Q1
★★	2SC945 or 2SC1815	Q2
★	1S1555 or 1S2076 or 1S2473	D1 – D3
★	RD5R1E	D4
	HTX-124	L1, L2 Coil
	HTX-125	L3 Coil
★	HCS-148	VR1 Volume, 50 kΩ(W)(BALANCE)
★	HCS-149	VR2 Volume, 50 kΩ(A)(TONE)
★	HCS-147	VR3 Volume, 20 kΩ(A)(VOLUME)
★★	HSD-108	S1 Switch (FUNCTION)
★★	HSH-126	S2 Switch (REC/PLAY)

RESISTORS

Mark	Part No.	Symbol & Description
	RD1/4HM□□□J	R1 – R9, R11 – R38, R40, R42, R43, R45 – R50, R53 – R56, R58, R60 – R63, R67 – R80
	RD1/4VS□□□J	R10, R39, R41, R44, R51, R52, R57, R59, R64 – R66

CAPACITORS

Mark	Part No.	Symbol & Description
	CEAR22P50	C1, C2, C39, C40
	CKDYD103M25	C3, C4
	CKDYB102K50	C5, C6, C21, C22, C41, C42
	CEA010P50	C7, C8, C19, C20
	CKDYB331K50	C9, C10
	CQMA273K50	C11, C12
	CEA330P10	C13, C14
	CEA2R2P50	C15, C16
	CEA101P10	C17, C18, C45, C46, C65
	CEA220P10	C23, C24
	CEA100P16	C25, C26, C62, C64
	CEA4R7P35	C27, C28
	CQMA153K50	C29, C30
	CEAR47P50	C31, C32
	CKDYB152K50	C33, C34
	CQMA333K50	C35, C36
	CKDYB272K50	C37, C38
	CEA470P10	C43, C44, C58, C63
	CCDSL100K50	C47, C48
	CQMA104K50	C49, C50
	CEA471P10	C51, C52, C57
	CEA221P10	C53, C69
	CEA101P16	C54
	CCDSL820J50	C55, C56
	CQMA122K50	C59
	CQMA562K50	C60
	CKDYB471K50	C61
	CEA331P10	C66
	CEA221P16	C67, C68

Power Supply Unit

Mark	Part No.	Symbol & Description
⚠ ★	10E1 or 1S1886 or SIB-01-01 or DS135	D1 – D4
	CEA222P16	C101
	CKDYF103Z50	C102, C103

LED Unit

Mark	Part No.	Symbol & Description
★	TLR205	D8 LED

Display Unit

MISCELLANEOUS

Mark	Part No.	Symbol & Description
★★	IR2E01	IC3
★	TLR205-5	D5
★	TLR205	D6

RESISTORS

Mark	Part No.	Symbol & Description
	RD1/4HM□□□J	R81 – R86

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA101P10L	C71
	CKDYF103Z25	C72
	CEA100P16	C73
	CEA010P50	C74, C75

Miscellaneous Parts List

Mark	Part No.	Symbol & Description	
★	HPM-133	ECM	Microphone Assy
★★	HXA-794	M	Motor Unit
⚠ ★	HTT-163	T	Power Transformer
★★	HPB-114	HD1	Head
★★	CPB-042	HD2	Head
★★	HPV-116	SP	Speaker
★★	HSN-124	S1	Switch (PLAY)
⚠ ★★	HSD-125	S2	Switch (Voltage Selector)

13. PACKING METHOD

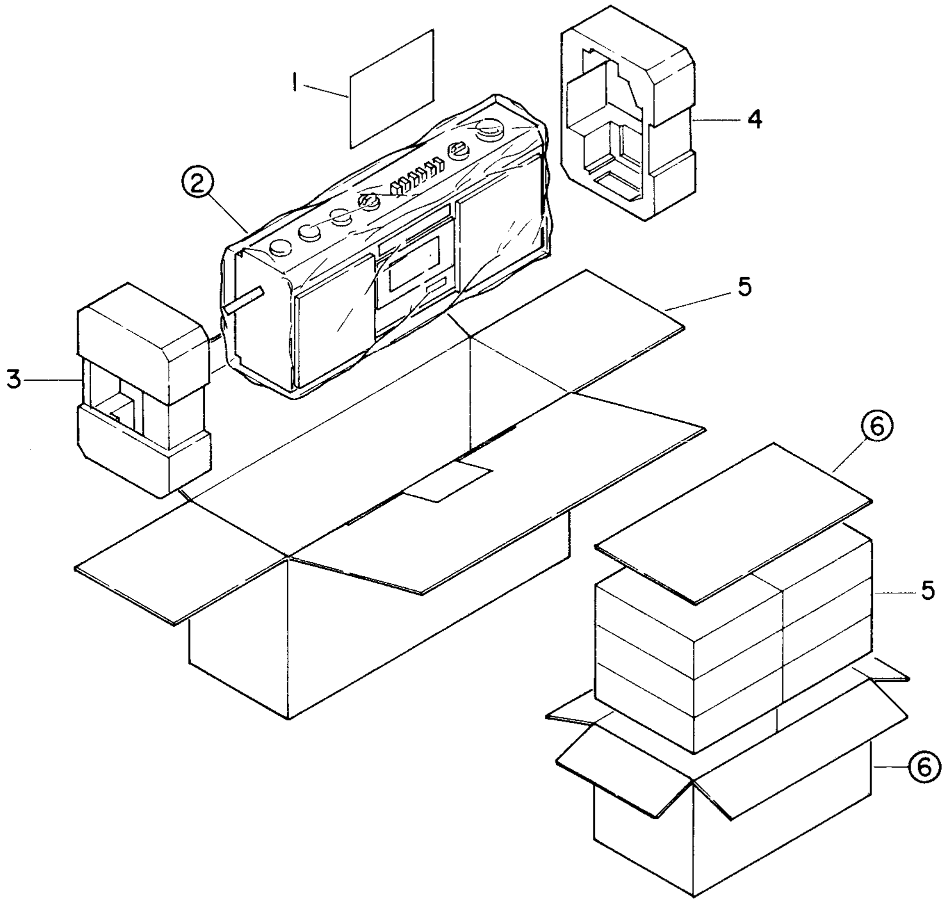

Fig. 28

PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical disignation.*

Mark	No.	Part No.	Description
	1.	HRD-167	Owner's Manual (English, Spanish)
		HRB-184	Owner's Manual (Arabic)
⚠		HDG-114	AC Cord

Mark	No.	Part No.	Description
	2.		Cover
	3.	HHA-582	Styrofoam
	4.	HHA-583	Styrofoam
	5.	HHA-581	Carton
	6.		Contain Box